Oct. 16, 1934. I. A. WYANT 1,977,220

MEANS FOR APPLYING FLUX

Filed Sept. 26, 1932 2 Sheets-Sheet 1

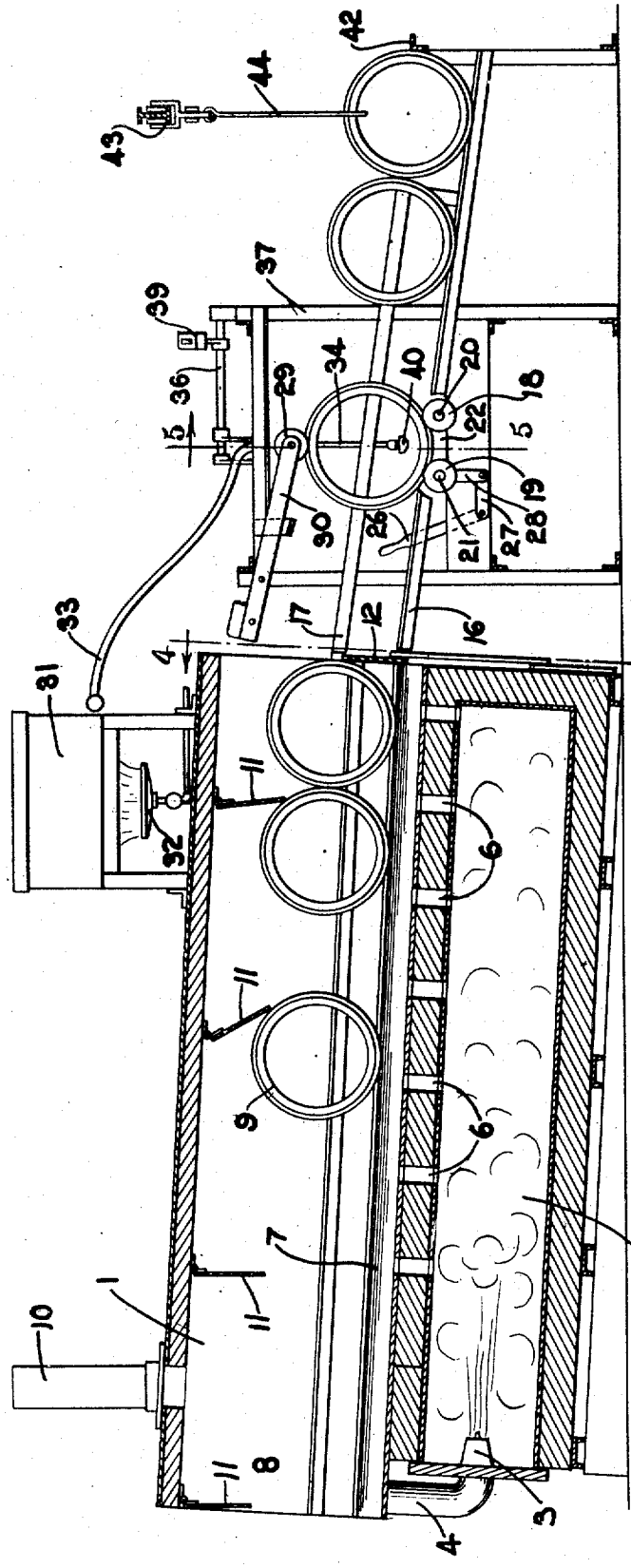


Fig. 1.

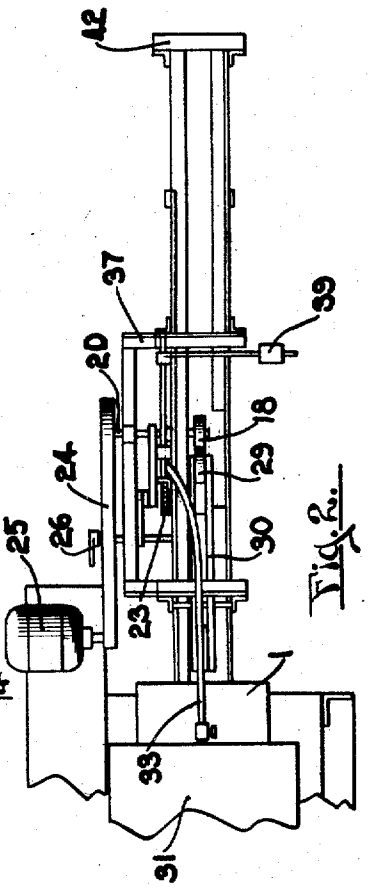


Fig. 2.

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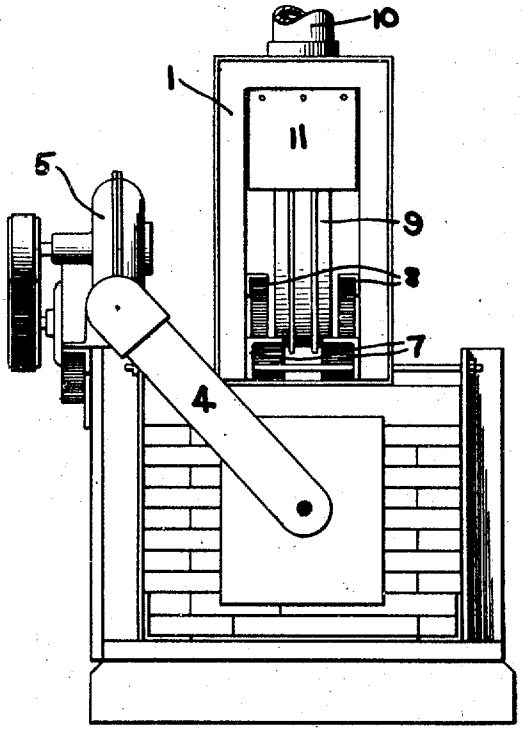


Fig. 3.

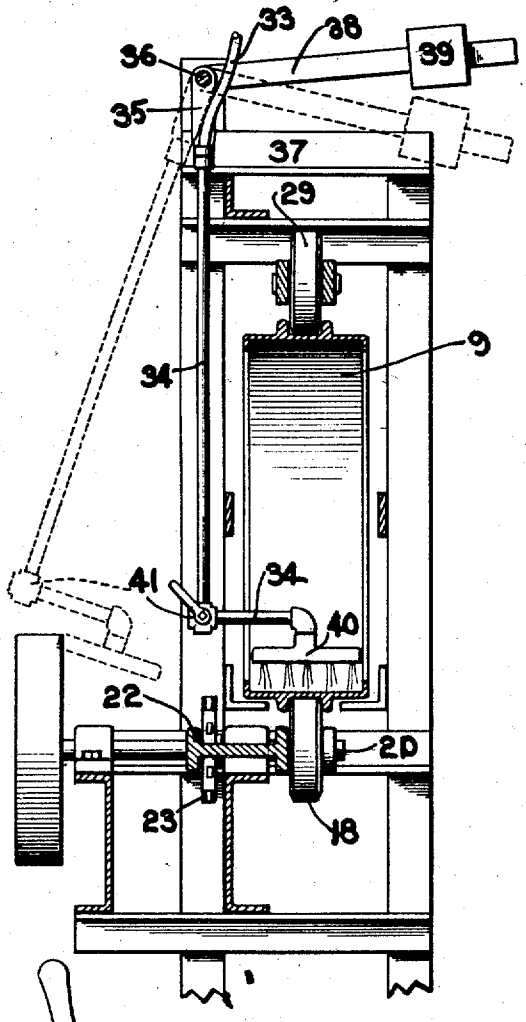


Fig. 5.

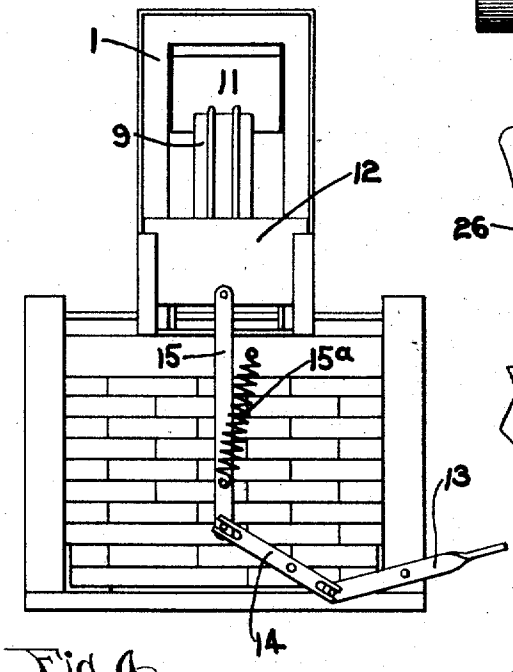


Fig. 4.

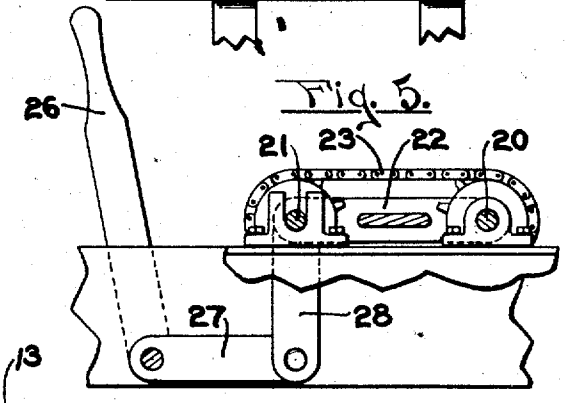


Fig. 6.

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Patented Oct. 16, 1934 1,977,220

UNITED STATES PATENT OFFICE

1,977,220

MEANS FOR APPLYING FLUX

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Application September 26, 1932, Serial No. 634,868

9 Claims. (Cl. 22—1)

This invention relates to a method of and apparatus for coating articles with a flux material. It is particularly directed to applying a coating of flux material to the inner cylindrical surfaces of shells used in the construction of brake drums made in accordance with the copending patent application of Donald J. Campbell, filed Feb. 2, 1931, Serial No. 512,792. Brake drums or analogous devices made in accordance with the said invention provide a cylindrical shell into which a cast lining is formed by a centrifugal casting operation and the cast lining is caused to fuse with the shell during the centrifugal casting operation. The present invention provides a means and method for applying a coating of flux material to the inner surface of the shell to aid in the joinder by fusing between the cast lining and the shell.

The objects of the present invention are to provide an apparatus and method by means of which the fluxing material may be applied cheaply, quickly, evenly and in general most efficaciously, to the shell. The invention is hereafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which,

Fig. 1 is a side elevation of a device embodying the apparatus of this invention and by which the method is performed, the device being shown partially in section.

Fig. 2 is a plan view of one end of the device.

Fig. 3 is an end elevation of the entry end of the device.

Fig. 4 is an end elevation of one portion of the device at line 4—4 of Fig. 1.

Fig. 5 is an enlarged vertical section of the device on the line 5—5 of Fig. 1, and

Fig. 6 is a fragmentary enlarged elevation of a portion of the drum ejecting mechanism.

Like reference numbers refer to like parts in all the figures.

1 represents an oven of elongated shape being slightly inclined to the horizontal beneath which is a heater or firebox 2. The firebox or heater 2 may be heated by any suitable means such as a flame burning therein which flame may be caused by burning a combustible gas ejected from a gas burner 3 as shown, the burner 3 being supplied with a forced air blast through the pipe 4 which air blast is derived from a blower outfit 5 including a fan and motor. Any other suitable means for supplying heat may be substituted for the specific device shown.

The heat from the heater 2 may be conducted to the oven 1 in any suitable way such as through openings 6 extending between the heater and the oven. The oven is provided with a track 7 with spaced apart guide rails 8, the track being inclined downwardly from the entrance end of the oven to the delivery end and the rails being spaced sufficiently apart to guide the cylindrical shells 9 which are placed upon the track in position to roll upon it. A suitable outlet flue 10 may be located in the upper part of the oven.

Hinged baffle plates 11 are located at intervals in the length of the oven and depend by hinged connections from the upper side thereof. The baffle plates extend downwardly to a location which is preferably somewhat lower than the upper parts of the shells 9 which roll against them. The baffle plates 11 are to prevent excessive loss of heat from the oven and they will retard circulation therein to a considerable extent and especially such circulation at the upper part of the oven which would tend to pass the heated air outward.

A delivery gate 12 is located at the lower delivery end of the oven 1 extending in the path of the shells 9 and is mounted for vertical sliding movement. A pedal 13 is connected by a lever 14 and a link 15 to move the gate 12 downwardly out of the path of the shells and a spring 15a normally holds the gate 12 in raised position. Operation of the pedal 13 causes the gate 12 to be lowered to permit the shells 12 to roll by gravity from the oven 1.

A downwardly inclined track 16 and guide rails 17 continue from the delivery end of the track 7 and guide rails 8 in the oven to receive the shells 9 as they are permitted to roll from the oven and at a rotating station located intermediately of the ends of the track a rotating device is provided. The rotating device consists of two spaced apart rollers 18 and 19. The roller 18 is preferably mounted on a shaft 20 which rotates upon a fixed axis and the roller 19 is mounted on a shaft 21 which may be raised and lowered. The shafts are connected by links 22 and the shaft 21 is driven from the shaft 20 by a chain 23 passing over sprockets on the respective shafts. The shaft 20 is suitably rotated as by a belt 24 passing over pulleys located respectively on the shaft 20 and on the shaft of a motor 25. A lever 26 has an arm 27 moved thereby and the arm 27 is connected by a link 28 to the shaft 21 whereby movement of the lever 26 will raise or lower the shaft 21. A cylindrical shell 9 rolling down the track 16 will be received and supported by its periphery on the rollers 18

and 19 which when rotated cause a rotation of the shell. An idler roller 29, mounted upon pivoted arm 30, rests upon the upper part of the periphery of the shell and aids to retain the shell in position upon the rollers 18 and 19 during rotation. The shell may be ejected from the rollers by moving the lever 26 in a direction to raise the shaft 21 and the roller 19 mounted thereon to a considerably higher position than the roller 18 whereat the shell will roll by gravity from the rollers and continue its rolling motion down the remainder of the track 16 between the guide rails 17.

Liquid flux material is applied to the inner surface of a shell 9 at the rotating station while it is being rotated by the rollers 18 and 19. The flux material, which may consist of a solution of water and borax or any other suitable ingredients, is contained in a tank 31 and may be heated therein by the flame from a burner 32. A conduit, such as a flexible hose 33, extends from the tank 31 and joins the upper end of a pipe 34. The pipe 34 is hung on a bracket 35 fixed to a shaft 36 mounted on a frame 37, which frame 37 also supports other parts of the structure, and a lever 38, having a weight 39, is also fixed to said shaft 36 and normally swings the lower end of the pipe 34 in a direction away from the framework and track on which the shells roll. The lower end of the pipe 34 is extended inwardly and is provided with a delivery nozzle 40 which assumes a position within the shell 9 when it is located upon the rollers 18 and 19. The nozzle 40 may be elongated and provided with a plurality of openings so that the flux material delivered therefrom will be evenly distributed over the entire width of the inner surface of the shell. A valve 41 is provided in the pipe 34 to stop the flow of flux material.

A stop rail 42 is located at a position above the lower end of track 16 to be engaged by the shells rolling down said track and to stop such rolling movement, one of the guide rails 17 terminating a distance short of said stop rail 42 equal to somewhat more than the diameter of a shell which leaves a gap through which the shell may be moved laterally of the track. A moving conveyor 43 is located over the track and is provided with a hook 44 which depends to a location where it will engage a shell resting upon the track 16 against the stop 42 and movement of the conveyor hook removes a shell through the gap in the guide rail 17 and carries it to a location for further operations permitting the next shell upon the track to roll downwardly against the stop 42.

Operation

After the oven 1 and the liquid flux material in the tank 31 have been heated to the desired temperatures, shells 9 are inserted in the oven by placing them upon the high end of the track 7 in the entrance end of the oven and permitting them to roll downwardly until stopped by the gate 12. Several of these drums may be inserted in the oven at the same time and they are permitted to remain therein until properly heated. The operator then depresses the pedal 13, lifting the gate 12 and permits one of the drums 9 to roll out of the oven upon the track 16 and to be deposited upon the rollers 18 and 19, permitting the gate 12 to rise after the passage of one shell to stop rolling movement of the next one. The rollers 18 and 19 may be caused to continuously rotate by operation of the motor 25 or the motor may be intermittently operated at each time that a shell is in place upon the rollers 18 and 19. In either event the shell is rotated by movement of the rollers 18 and 19 and held in position thereon by the idler roller 29 and during such rotation the lower end of the pipe 34 carrying the nozzle 40 is manually swung into position within the shell and the valve 41 is opened to permit the flux material to flow from the nozzle 40 onto the inner surface of the rotating shell. The nozzle is held in this position and the valve 41 is retained open until a sufficient quantity of the flux material has been deposited upon the shell after which the valve 41 is closed and the nozzle 40 is permitted to swing away from the shell by action of the weight 39.

The shell is rotated for a sufficient time to permit the flux material to set after which the lever 26 is moved to raise the shaft 21 carrying the roller 19 to a position higher than the roller 18 which causes the shell to move from the rollers by gravity and to travel down the remainder of the track 16 where it is stopped by the stop rail 42 or against another shell which has preceded it. The hook 44 then successively removes the shells from the track as previously described and carries them to a location at which further operations are performed.

By this apparatus and method the cylindrical shells are first effectively heated to a desired temperature and then while hot are rotated in a manner so that the liquid flux material may be evenly applied to the inner cylindrical surface. The rotation of the shell while the flux material is being applied thereto is sufficiently rapid to prevent displacement of the flux material by gravity flow and the rotation is preferably sufficiently rapid to cause centrifugal force to act upon the flux material to cause it to pass forcibly against the surface of the shell. The rotation is continued until the heat of the shell has dried the flux material to a consistency that will cause it to remain in place after rotation has ceased. Therefore, the shell, after it has been ejected from the rollers 18 and 19, has received an even coating of flux material which has been dried thereon by heat of the shell and the shell can thereafter be handled in any position without disturbing the flux coating.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. A device of the class described for applying flux to brake drums comprising, a downwardly inclined track adapted to receive the drum thereon, an intermediate portion of the track being cut away, a first means located in said cut away place for receiving said drum and rotating the same, a second means for tiltably supporting the first mentioned means whereby the drum is ejected from the said first means and means for applying flux to said drum when it is located in said first mentioned means.

2. A device as set forth in claim 1 in which the first mentioned means rotates the drum about a horizontal axis.

3. A device as set forth in claim 1 in which the flux applying means includes a nozzle and means for mounting the nozzle for swinging movement whereby it may be swung interiorly of said drum.

4. In combination, a relatively long inclined track adapted to receive a plurality of brake

drums thereon, a furnace enclosing the higher end of the said track, the lower end of the said track having a portion cut away, a brake drum revolving means located in said cut away portion, means for tiltably mounting said brake drum revolving means whereby the brake drums may be held therein or ejected therefrom, means for spraying liquid flux interiorly of each brake drum when it is located on said revolving means and a movable gate located adjacent the end of the furnace at which the brake drums emerge and means for actuating said gate means whereby the drums may be permitted to roll out of the furnace one at a time.

5. A combination of elements as set forth in claim 4 in which conveyor means is located transversely of and above the lower end of the inclined track to remove the brake drums therefrom.

6. A combination of elements as set forth in claim 18 in which a frame is located above the brake drum revolving means, an arm having one end pivoted onto the frame, a roller on the other end of the arm, said roller being above the brake revolving means and being adapted to rest upon a brake drum located therein for the purpose described, said spraying means including lever means pivoted onto the said frame for swinging movement.

7. A device of the class described for applying flux to brake drums comprising, a downwardly inclined track adapted to receive the drum thereon, an intermediate portion of the track being cut away, a first means located in said cut away place for receiving said drum and rotating the same, a second means for tiltably supporting the first mentioned means whereby the drum is ejected from the said first means, a frame, an arm pivoted at one end onto the frame, the arm carrying a roller located above the drum which is being located and yieldably contacting against the same whereby the drum may be ejected as described.

8. A device as set forth in claim 7 which also has a flux applying means pivotally mounted on said frame.

9. A device of the class described for applying flux to brake drums comprising, a downwardly inclined track adapted to receive the drum thereon, a first means for receiving, holding and rotating the drum, a second means for supporting the first mentioned means in a sloping position whereby the drum rolls from the said first means and means for applying flux to said drum when it is located in said first mentioned means.

IRA A. WYANT.

CERTIFICATE OF CORRECTION.

Patent No. 1,977,220. October 16, 1934.

IRA A. WYANT.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, line 21, claim 6, for the numeral "18" read 4; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 13th day of November, A. D. 1934.

Leslie Frazer

Acting Commissioner of Patents.

(Seal)

drums thereon, a furnace enclosing the higher end of the said track, the lower end of the said track having a portion cut away, a brake drum revolving means located in said cut away portion, means for tiltably mounting said brake drum revolving means whereby the brake drums may be held therein or ejected therefrom, means for spraying liquid flux interiorly of each brake drum when it is located on said revolving means and a movable gate located adjacent the end of the furnace at which the brake drums emerge and means for actuating said gate means whereby the drums may be permitted to roll out of the furnace one at a time.

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9. A device of the class described for applying flux to brake drums comprising, a downwardly inclined track adapted to receive the drum thereon, a first means for receiving, holding and rotating the drum, a second means for supporting the first mentioned means in a sloping position whereby the drum rolls from the said first means and means for applying flux to said drum when it is located in said first mentioned means.

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