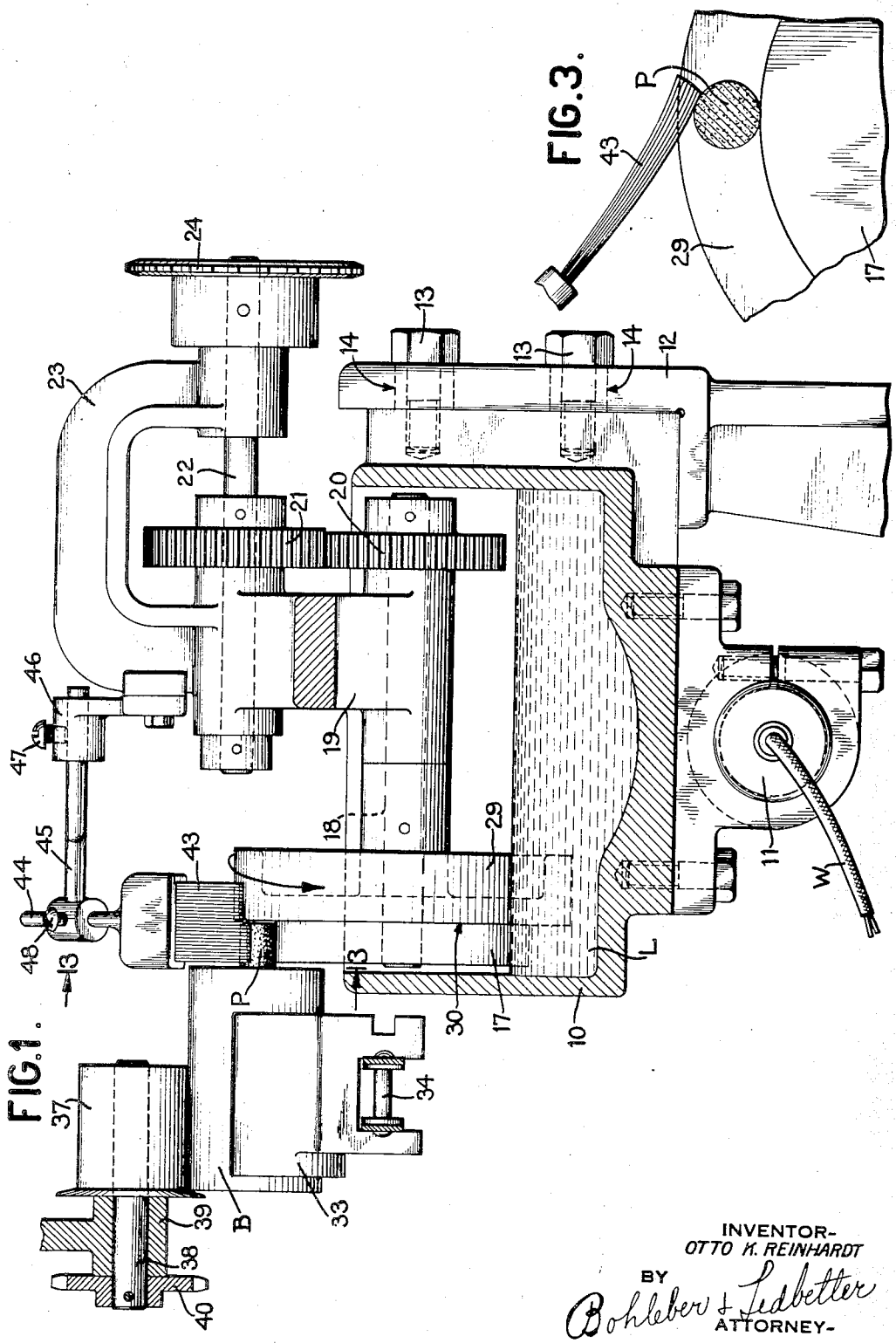
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DRY CELL MAKING MACHINERY

Filed Oct. 30, 1931 2 Sheets-Sheet 1




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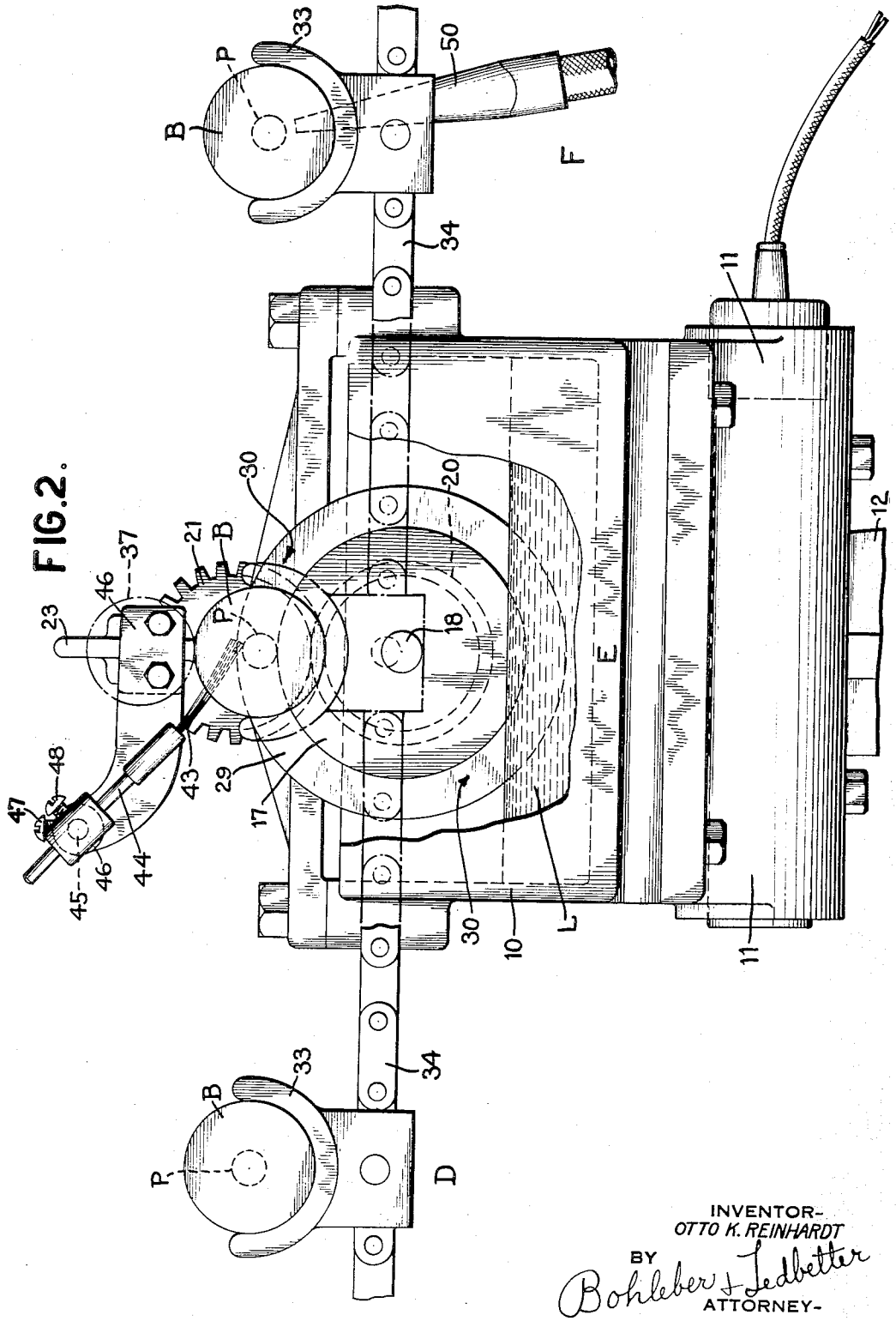



FIG. 2.

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## DRY CELL MAKING MACHINERY

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Application October 30, 1931, Serial No. 572,185

10 Claims. (Cl. 91—27)

The invention pertains to automatic coating devices for coating an article with a liquid and is particularly suited for the coating with paraffin the end of the carbon pencil which is inserted in a battery bobbin. The invention is applicable for the coating of other articles in addition to the specific use referred to without any or material changes in the construction to be described herein. The coating or paraffining device is particularly adapted to be provided upon a machine which performs other operations upon a bobbin for an electrolytic cell and may be the last operation performed upon the cell by the machine.

An object of the invention is to construct a device for automatically coating the end of an article with a liquid, such as the end of the carbon pencil protruding from a bobbin, with paraffin so that the end of the article is completely and effectively coated thereby.

Other objects of the invention will be more apparent from the following description, taken in connection with the accompanying drawings showing a preferred embodiment thereof, in which:

Figure 1 is a cross section through the reservoir of the coating device showing the end of a carbon protruding from a bobbin for an electrolytic cell and being coated with paraffin.

Figure 2 is an end view of the coating device with the carbon pencil of the bobbin in position to be coated with paraffin.

Figure 3 is an enlarged partial view of the carbon pencil of the bobbin, paraffining wheel and brush which may be used to aid the coating of the end of the pencil.

The end of the carbon pencil of a bobbin for an electrolytic cell has been coated heretofore with paraffin manually, by a workman grasping a number of cells in both hands and dipping them into a reservoir of molten paraffin. Such manual handling of the bobbins is relatively expensive, even though the dipping proceeds rapidly, and hence the desirability of performing this operation automatically and preferably in conjunction with other automatic operations upon the bobbin is apparent. The device is applicable for the coating of other articles with liquids of any sort as will be apparent from the description of the device which will be given.

The automatic coating or paraffining device has a reservoir 10 which contains the coating liquid or wax L. If the liquid is paraffin or some other material which is not liquid at normal temperatures, a heating means 11 may be provided therefor to keep the material in a liquid state. The heating means may conveniently be an electrical heating unit connected to a power line by means of the wires W. It is clear that any other heating means may be provided in order to maintain the coating materials which are not normally liquid in a liquid condition. The reservoir is supported upon a frame 12 by means of the bolts 13 which pass through elongated slots 14 in the frame so that vertical adjustment of the reservoir may be obtained.

A coating wheel 17 is carried upon a shaft 18 rotatably mounted in a supporting bearing 19. A gear 20 is also carried by the shaft 18 which is in mesh with the driving gear 21 carried upon a shaft 22 mounted in bearings in a frame 23. The shaft 22 carries a sprocket 24 connected with a source of power for rotating the coating wheel 17.

The coating wheel 17 has two circumferences, one of which is a circumference 29 larger in diameter than the other. A circumferential shoulder 30 joins the circumferences of the coating wheel 17 and extends at right angles to the periphery of the smaller portion or circumference of the wheel. The two circumferences of the coating wheel 17 have their lower portions immersed in the coating liquid L in the reservoir 10 so that upon rotation, the coating liquid adheres to the peripheries as well as to the shoulder 30 of the wheel and is carried thereby to the top thereof.

The article to be coated is intermittently advanced to the coating position where the end of the article to be coated is brought into contact with the coating wheel 17 and the shoulder 30. The bobbin B is carried in a saddle 33 carried upon an endless conveyor or chain 34. This conveyor is intermittently advanced so that the bobbin is advanced from position D to position E where the end of the carbon pencil contacts with the coating wheel 17 and after the coating operation is completed, the bobbin is advanced to position F and the next bobbin is brought into coating position. It is clear that any other device for automatically and intermittently carrying the article or bobbin into waxing or coating position where the end of the article to be coated comes into contact with the coating wheel long enough to completely coat the end of the article and is then advanced to carry the coated article away therefrom and at the same time bringing a second article into coating position, is contemplated by the invention.

The chain conveyor 34 with the saddles 33 carried thereby form part of the conveying mechanism by means of which a bobbin for an electro-

lytic cell is covered with netting which netting is retained in place by a thread. The machine to which this coating device is attachable in addition performs other operations upon the bobbin. Since this forms no part of this invention, these additional operations and the construction of the machine whereby they are performed will not be described.

The article to be coated after being brought into contact with the coating wheel 17 is rotated in order to assure that the entire circumference thereof is coated with the liquid or paraffin L. A rotating wheel 37 is carried upon a shaft 38 journalled in a bearing 39 and the roller 37 is rotated by any means such as a sprocket 40 connected with a rotating drive. The bobbin B when advanced into waxing position comes into contact with the rotating roller 37 so that the bobbin B and carbon pencil P are rotated thereby while held stationary in the coating position E. This assures that the entire periphery of the end of the carbon pencil comes into contact with the rotating coating wheel 17 and in contact throughout its periphery with the liquid carried by the wheel. The bobbin is also so positioned that the end of the carbon pencil P comes into contact with the shoulder 30 on the coating wheel 17 so that the face or end of the carbon pencil P is also coated with the wax or liquid. Incidentally, the rotating roller 37 is the roller upon the bobbin winding machine which creases the end of the netting upon the back end of the bobbin B. So far as the paraffining operation is concerned, however, the roller 37 provides the rotating means for the bobbin B while the bobbin is in the coating position.

The coating wheel 17 and the shoulder 30 carried thereby are sufficient to coat the end of the article or carbon P as well as the face of the end of the carbon. It may occur in some bobbins under the process by which they are manufactured, that for some reason the carbon pencil P does not project the normal and usual distance from the bobbin. In such case, there is some possibility that the face of the end of the carbon will not come into contact with the shoulder 30 so that one or two out of a large number of bobbins may not be sufficiently coated or waxed upon the very end. In order to avoid this possibility and to assure that every carbon is completely waxed or coated, a brush 43 is carried upon a holder 44 which is adjustably carried in a supporting means 45. The supporting means 45 is in turn adjustably carried in a bracket 46. A screw 47 locks the supporting means 45 in the bracket 46 and the screw 48 locks the brush holder in adjusted position in the supporting means. By this construction the longitudinal position of the brush 43 may be adjusted and it may also be adjusted rotatably in the supporting means 45. The brush 43 may also be adjusted by means of the adjustment between the supporting means 45 and the bracket 46 as will be apparent, so that the length of the end of the article to be coated and the angle of inclination of the brush can be adjusted at will.

The brush 43 contacts with the periphery of the larger portion or circumference 29 of the coating wheel 17. This brush wipes off the liquid or wax upon the larger diameter 29 so that an accumulation of liquid is obtained which flows down onto the carbon P and between the end of the carbon and the shoulder 30, in case the carbon should fail to contact with the shoulder. With this construction the entire end of the article or carbon will always be coated with the paraffin or liquid and a sufficient supply of liquid upon the brush is assured.

The larger circumference 29 of the wheel 17 serves as a means for raising or supplying coating liquid to the brush. The brush 43 is simply a means for accumulating the liquid upon the larger circumference 29 adjacent to the carbon pencil so that the liquid may flow down between the end of the carbon and the shoulder 30 in case the carbon fails to contact with the shoulder. The brush also assists in coating or applying the liquid to the end of the pencil as well as uniformly distributing the liquid thereupon. The brush separately is capable of coating the end of the article and the wheel 17 with its smaller circumference and the circumferential shoulder 30 is also separately able to coat the end of the article. Each part together, however, renders doubly certain that the end of the carbon pencil P will be coated with liquid and that the liquid will be uniformly distributed thereon.

The coated carbon of the bobbins may be delivered where desired so that the paraffin may harden. A jet of air may be supplied by the nozzle 50 at the subsequent position F which quickly cools off the paraffin. This may be provided if desired, although it is not essential.

Various modifications will occur to those skilled in the art in the configuration, composition and disposition of the component elements going to make up the invention as a whole, as well as in the selective combination or application of the respective elements, and no limitation is intended by the phraseology of the foregoing description or illustrations in the accompanying drawings, except as indicated in the appended claims.

What is claimed is:

1. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, a circumferential shoulder carried by the wheel extending radially outward therefrom, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position with the circumference and end face of the article into contact with the rotating wheel and away therefrom, and means rotating the article in coating position.

2. A liquid coating device comprising a liquid reservoir, a brush disposed at a coating position contacting with the article to be coated, rotating means partially submerged in the liquid in said reservoir and conveying the liquid from the reservoir to at least the periphery of the article, an endless carrier for the article to be coated comprising a plurality of substantially semi-cylindrical seats for the articles, respectively, means intermittently advancing the carrier to bring the articles to the coating position and away therefrom, and means rotating the article within a seat at the coating position.

3. A liquid coating device comprising a liquid reservoir, a brush contacting with the article to be coated and applying liquid thereto, means to adjustably support the brush, means conveying the liquid from the reservoir to the article and to the brush, an endless carrier for the article to be coated comprising a plurality of substantially semi-cylindrical seats for the articles, respectively, means intermittently advancing the carrier to bring the articles seriatim to the coating position and away therefrom, and means rotating the article within a seat at the coating position.

4. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position into substantial contact with the wheel and away therefrom, means rotating the article in coating position, and means accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto.

5. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, a circumferential shoulder carried by the wheel, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position with the end face of the article in contact with the shoulder on the wheel and away therefrom, means rotating the article in coating position, and means accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto.

6. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, the wheel having two circumferences, a circumferential shoulder joining the two circumferences of the wheel, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position into contact with the smaller circumference of the wheel with the end face of the article in contact with the shoulder on the wheel and away therefrom, means rotating the article in coating position, and means accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto.

7. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position in substantial contact with the wheel to receive liquid therefrom and away therefrom, means rotating the article in coating position, and a brush contacting with the periphery of the wheel and article for accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto.

8. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, a circumferential shoulder carried by the wheel, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position with the end face of the article in contact with the shoulder on the wheel and away therefrom, means rotating the article in coating position, and a brush contacting with the periphery of the wheel and article for accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto.

9. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, the wheel having two circumferences, a circumferential shoulder joining the two circumferences of the wheel, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position into contact with the smaller circumference of the wheel with the end face of the article in contact with the shoulder on the wheel and away therefrom, means rotating the article in coating position, and a brush contacting with the periphery of the wheel and article for accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto.

10. A liquid coating device comprising a liquid reservoir, a wheel rotating in the reservoir and projecting above the liquid therein, the wheel having two circumferences, a circumferential shoulder joining the two circumferences of the wheel, a carrier for the article to be coated, means intermittently advancing the carrier to bring the article to the coating position into contact with the smaller circumference of the wheel with the end face of the article in contact with the shoulder on the wheel and away therefrom, means rotating the article in coating position, a brush contacting with the periphery of the wheel and article for accumulating the liquid upon the wheel at a point adjacent the article and applying the liquid thereto, and means supporting the brush for adjusting the position thereof.

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