Jan. 24, 1928. 1,656,977

F. T. HENRY

TINNING AND RETINNING MACHINE

Filed Dec. 30, 1926 3 Sheets-Sheet 1

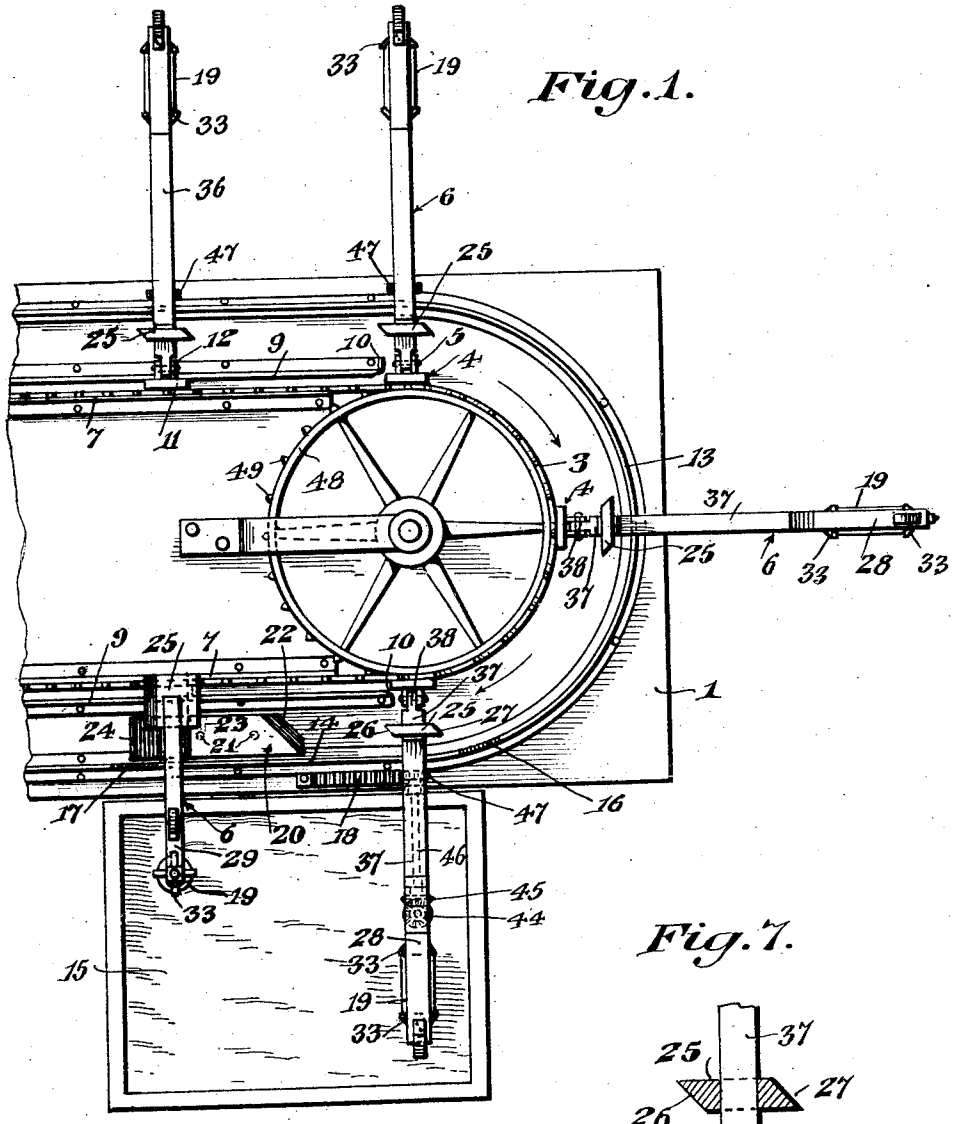


Fig. 1.

Fig. 7.

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Fig. 2.

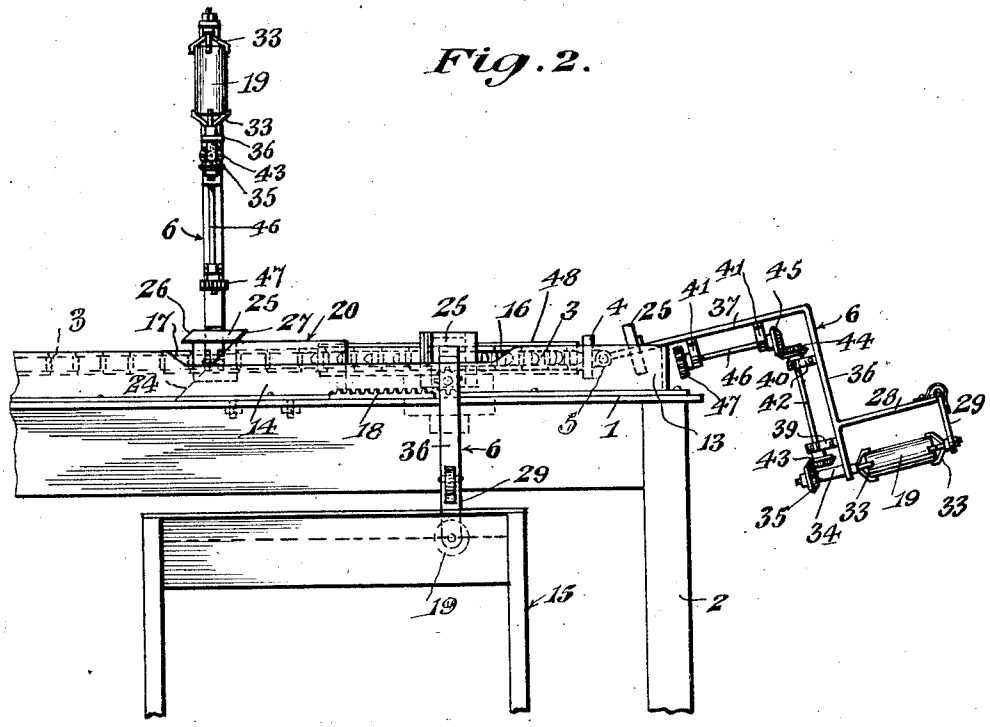


Fig. 4.

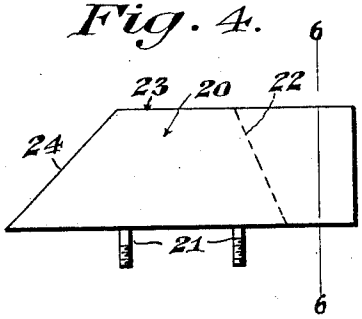


Fig. 6.

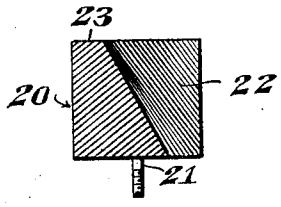
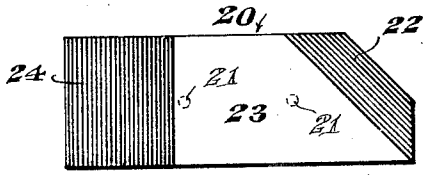


Fig. 5.



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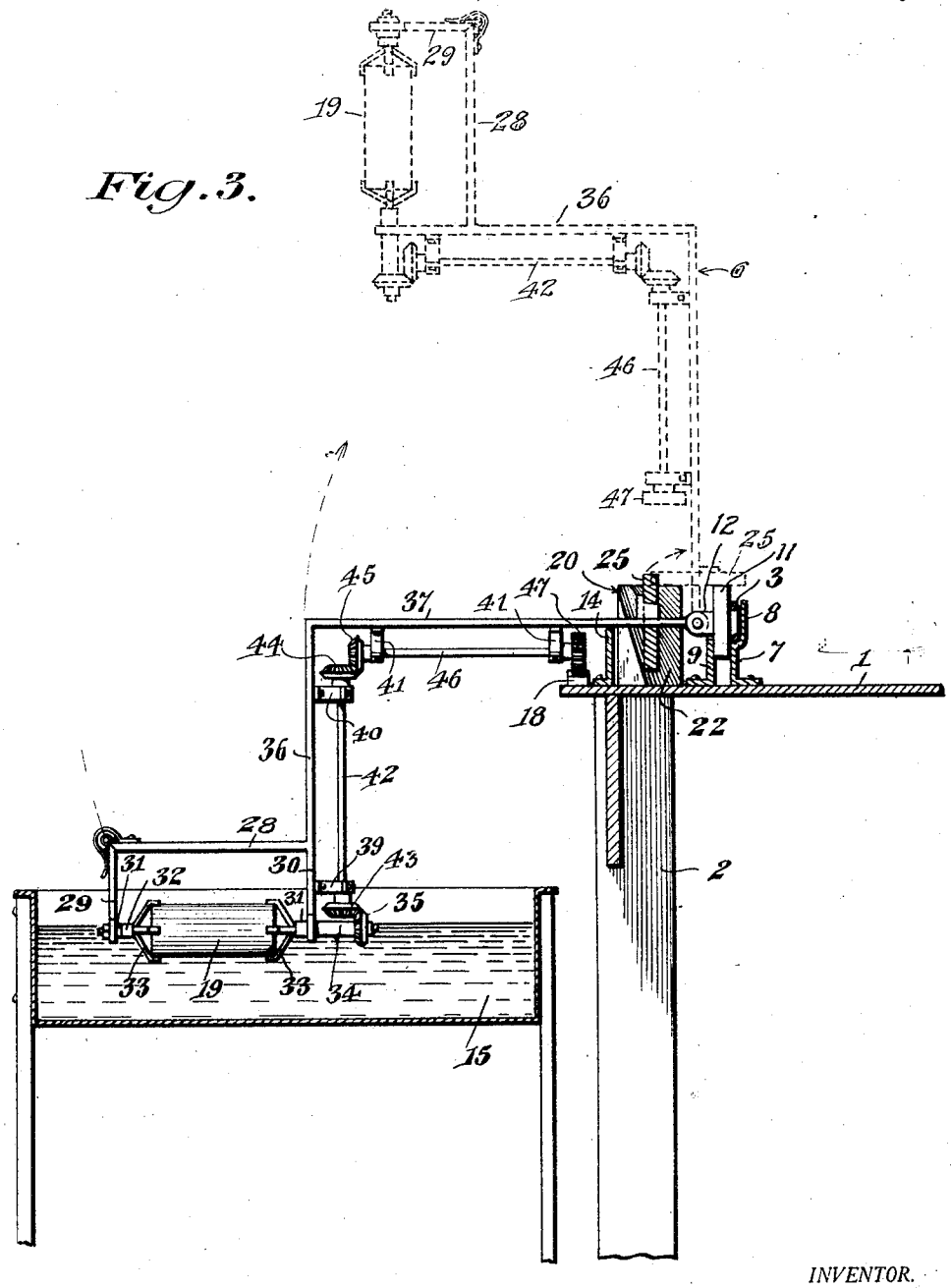
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TINNING AND RETINNING MACHINE

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Fig. 3.



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Patented Jan. 24, 1928. 1,656,977

UNITED STATES PATENT OFFICE.

FRANK T. HENRY, OF DETROIT, MICHIGAN.

TINNING AND RETINNING MACHINE.

Application filed December 30, 1926. Serial No. 157,983.

This invention relates to tinning and retinning machines, more particularly to a carrier for the article to be treated, and has for its object to provide, in a manner as hereinafter set forth, a travelling carrier for positioning and revolving the article within a suitable bath for the coating thereof, and further for disposing the article, after its removal from the bath, in a perpendicular position to provide for the dripping therefrom of any surplus coating.

Further objects of the invention are to provide, in a manner as hereinafter set forth a carrier for the purpose referred to, which is simple in its construction and arrangement, strong, durable, compact, thoroughly efficient in its use, and comparatively inexpensive to set up, as well as conveniently installed with respect to the conveyor element of a tinning or re-tinning or coating machine.

With the foregoing and other objects in view, the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:

Figure 1 is a fragmentary view, in top plan, of a tinning or retinning or coating machine, showing the adaptation therewith of article carriers in accordance with this invention.

Figure 2 is a fragmentary view in side elevation, of a tinning, or re-tinning or coating machine, showing the adaptation therewith of article carriers in accordance with this invention.

Figure 3 is a fragmentary view, in cross section, of a tinning, re-tinning or coating machine, showing the adaptation therewith of an article carrier in accordance with this invention, and with the carrier shown in full lines positioning the article in a bath and in dotted lines the position of the carrier supporting the coated article in perpendicular position for the purpose of dripping therefrom the surplus coating material.

Figure 4 is a front elevation of a cam element to provide for the elevating and lowering of the carrier.

Figure 5 is a rear elevation of the cam element.

Figure 6 is a section on line 6—6 Figure 4.

Figure 7 is a fragmentary view, in section illustrating the inner end of the carrier.

Referring to the drawings in detail 1 denotes a platform or table, mounted on suitable supports, as indicated at 2. Travelling over the table 1, lengthwise thereof is an endless conveyor 3, only an end portion thereof is shown, and which is in the form of a chain, provided at spaced intervals with yoke-shaped members 4, which in connection with pivot pins 5, pivotally connect laterally disposed carriers referred to generally by the reference character 6, to the conveyor 3, so that the carriers 6 will be shifted lengthwise of the table or rather around the top of the table by the conveyor 3. Secured to the table 1 is a pair of longitudinally extending combined guides and supports 7, and each of which is offset as at 8 to set up a supporting means for the conveyor 3. Positioned exterior of the combined guides and supports 7, as well as spaced therefrom, are longitudinally extending guides 9, of less height than the combined guides and supports, and these latter in connection with the guides 9 act to guide the members 4, see Figure 3. The guides 9 are of greater length than the combined guides and supports 7 and project beyond the ends of these latter as shown in Figure 1. Each end of a guide 9 is bevelled as at 10. The guides 9 are of less height than the height of the combined guides and supports 7. Each yoke shaped member 4 includes a head 11 and a pair of spaced outwardly extending arms 12. The head 11 projects above, below and laterally from the arms 12, and these latter are disposed centrally with respect to the outer face of the head 11. The heads 11 are fixedly secured to the conveyor 3 and the arms 12 are spaced above the top edge of the guides 9.

Secured upon the top 1 is a track member 13 which extends entirely around the conveyor 3, but is spaced outwardly with respect thereto. The track member 13 is formed with low portions 14 which correspond in number to the number of baths 15 which are arranged at one side of the table, and are of less height than the height of the latter.

Each low part 14, only one of which is shown, of the track 13, is connected to the high part of the track, by oppositely extending bevelled portions 16, 17. The high part of the track 13 is designed for maintaining the carrier 6 in the position as shown in Figure 2, which is laterally and at an upward inclination with respect to the table 1. The low portion 14 of the track, is provided for supporting the carrier 6 at right angles with respect to the table 1, see Figure 3 and to further provide for the carrier 6 to position the article to be coated within the bath. The low portion 14 of the track 13, is of less length than the length of the bath, see Figure 2. The position of the carrier 6 when the article is being coated is as shown in Figure 3.

Secured upon the table 1, exteriorly of the low portion 14 of the track 13 is a rack 18, and the function of which will be presently referred to. The rack 18 starts at one end in proximity to the entering part of the low portion 14 of the track 13 and has its other end spaced a greater distance from the other end of the low portion 14 of the track. The rack 18 is of a length materially less than the length of the bath 15. The teeth of the rack are arranged below the edge of the low portion 14 of the track. The function of the rack 18 provides for the revolving of the article 19 to be coated, when the article 19 is lowered into the bath 15 and as the article is moved through the bath a short distance.

Secured to the table 1, between the guides 9 and the low part 14 of the track 3, is a cam element 20, of greater height than the high part of the track 13 and also of greater height than the combined guides and supports 7. The element 20 is formed with depending peripherally threaded extensions 21, for anchoring it to the table top. The element 20 includes an inclined surface 22, a flat surface 23 at its top, and an inclined surface 23. The inclined surface 22 inclines upwardly and inwardly from its lower end and rearwardly and downwardly from its front. The surfaces 24 inclines downwardly and outwardly with respect to the flat surface 23. The surface 22 provides means for elevating the carrier 6 to the dotted line position shown in Figure 3 and the surface 24 provides means for restoring the carrier to its inclined position as shown in Figure 2. The carrier 6 includes a shifting block 25, having bevelled ends 26, 27. The bevelled end 26 coacts with the cam surface 22 for the purpose of elevating the carrier to the dotted line position shown in Figure 3, and when said block 25 rides off the surface 22, it is supported upon the surface 23. The surface 24 coacts with the bevelled end 27 for the purpose of restoring the carrier to normal position.

The carrier 6 consists of an inverted yoke-shaped part 28 formed with a pivoted spring controlled arm 29. The other arm of the part 28 is fixed and is indicated at 30. Each of the arms 29, 30 is normally disposed vertically and carries an inwardly extending bearing 31, at its lower end. The bearing 31, carried by the arm 29 is provided with a revoluble gripper member 32. Extended from the bearing 31, carried by the arm 30 is a revoluble gripper member 33, which is operated from a shaft 34, extending at right angles from the arm 30 and provided on its outer end with a bevelled gear 35. Formed integral with the arm 30 is an angle shaped bar consisting of a pair of arms 36, 37 disposed at right angles with respect to each other. The arm 36 is normally vertically disposed and is of less length than the arm 37 and is formed integral with the upper end of the arm 30. The arm 37 is normally horizontally disposed and extends inwardly at right angles with respect to the upper end of the arm 36 towards the table and is formed with a reduced inner terminal portion 38, arranged between a pair of arms 12 and pivotally connected therewith by the pivot pin 5. By this arrangement the carrier 6 can be swung on the pivot 5 and the arms 36, 37 horizontally and vertically disposed respectively. The arm 30 has extending inwardly therefrom a bracket 39 and which is arranged in alinement with a bracket 40 which projects inwardly from the arm 36. The arm 37 is provided with a pair of depending brackets 41. Extending through the brackets 39 and 40 is a shaft 42, having its lower end provided with a bevelled gear 43 which meshes with the bevelled gear 35. The upper end of the shaft 42 carries a bevelled gear 44, which meshes with a bevelled gear 45 carried on the outer end of a shaft 46 which is mounted in the brackets 41. The inner end of the shaft 46 carries a gear 47 adapted to engage with the rack 18 to provide for the operation of the shafts 42, 46 as well as the shaft 34, whereby the grippers 32 and 33 are revolved and as the grippers carry the article 19, the latter will be revolved synchronously with the operation of the shafts referred to.

A carrier constructed in a manner as aforesaid, not only provides means for supporting the article 19 in a position to be coated, but furthermore provides for the revolving of the article 19 when placed in the bath 16 and also permits of the article 19 to be shifted to a perpendicular position so that the surplus coating can drip therefrom.

The block 25 is secured to the arm 37 in proximity to but spaced from its pivoted end. When the carrier is shifted to the dotted line position shown in Figure 3, the block 25, not only seats on the cam element 20, but also upon the head 11 of a yoke-shaped member, see Figure 3.

The conveyor 3 is operated by pulleys, only one of which is shown, and which are revolubly supported by the table 1, in proximity to each end thereof. The pulley shown is indicated at 48, and has its rim formed with lugs 49 which engage in the conveyor 3, which is of the link type, thereby causing the travel of the conveyor. The reduced end terminal 38 of the arm 37, is provided with an opening 50 for the passage of the pivot 5.

It is thought the many advantages of a carrier, as well as its operating means, in accordance with this invention, can be readily understood, particularly in view of the fact that it not only provides means for subjecting the article to be coated, to a bath, but further provides for the revolving of the article while it is in the bath, and then furthermore it acts to elevate the article to a perpendicular position so that the surplus coating can drip therefrom, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:

1. In a coating machine, a non-revoluble, pivoted, travelling carrier for the article to be coated and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end, said vertical arm including means for revolubly supporting the article, operating means for said revoluble supporting means carried by said arms, means for shifting the carrier on its pivot to position the article in a perpendicular manner to permit of the surplus coating dripping from the article.

2. In a coating machine, a non-revoluble, pivoted, travelling carrier for the article to be coated and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end, said vertical arm including means for revolubly supporting the article, operating means for said revoluble supporting means carried by said arms, means for shifting upwardly the carrier on its pivot to position the article in a perpendicular manner to permit of the surplus coating dripping from the article, and said means for revolubly supporting the article including a pivoted spring controlled element capable of being shifted to release the article.

3. In a coating machine, a non-revoluble, pivoted travelling carrier for the article and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end, a yoke carried by said vertical arm, means carried by the yoke for revolubly supporting the article to be coated, operating means carried by said arms for said revoluble supporting means, means carried by the horizontal arm for shifting upwardly the carrier on its pivot to position the article in a perpendicular manner to permit of the surplus coating dripping from the article.

4. In a coating machine, a non-revoluble, pivoted travelling carrier for the article and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end, a yoke carried by said vertical arm, means carried by the yoke for revolubly supporting the article to be coated, operating means carried by said arms for said revoluble supporting means, means carried by the horizontal arm for shifting the carrier on its pivot to position the article in a perpendicular manner to permit of the surplus coating dripping from the article, and said yoke including a pivoted spring controlled arm capable of being shifted to release the article from the carrier.

5. In a coating machine, a travelling article carrier including a non-revoluble body portion having its inner terminus pivoted and its outer end provided with a pair of horizontally disposed suspended, endwise opposed revoluble article grippers arranged in spaced relation and providing means for supporting and for revolving articles carried thereby when positioned within a bath, said carrier having revoluble means forming a part thereof and engaging with one of the grippers for revolving both grippers when in article supporting position for revolving, and means coacting with said body portion for bodily shifting said carrier upwardly on its pivot to remove the article from the bath and to hold the grippers vertically to support the article in a perpendicular manner to provide for the surplus coating to drip from the article.

6. In a coating machine, a travelling article carrier including a non-revoluble body portion having its inner terminus pivoted and its outer end provided with a pair of horizontally disposed suspended, endwise opposed revoluble article grippers arranged in spaced relation and providing means for supporting and for revolving the article carried thereby when positioned within a bath, said carrier having revoluble means forming a part thereof and engaging with one of the grippers for revolving both grippers when in article supporting position for revolving, and means coacting with said body portion for bodily shifting said carrier upwardly on its pivot to remove the article from the bath and to hold the grippers vertically to support the article in a perpendicular manner to provide for the surplus coating to drip from the article, one of said grippers carried by a fixed support and the other carried by a pivoted spring controlled support, said supports forming parts of said carrier.

7. In a coating machine, a non-revoluble, pivoted, travelling carrier for the article

to be coated and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end and said vertical arm extended from the outer end of the horizontal arm, a pair of spaced, revoluble article grippers carried by said vertical arm, one of said grippers mounted in a spring controlled pivoted support providing for the shifting of such gripper relative to the other gripper, operating means for said grippers carried by said arms, means for upwardly shifting the carrier on its pivot to position the grippers vertically to dispose the article in a perpendicular manner thereby permitting of the surplus coating dripping from the article.

8. In a coating machine, a non-revoluble, pivoted, travelling carrier for the article to be coated and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end and said vertical arm extended from the other end of the horizontal arm, means carried by the vertical arm for revolubly supporting the article to be coated, operating means carried by said arm for the article supporting means, a shifting block carried by the horizontal arm in proximity to its pivot, and a cam element arranged in the path of said block for shifting the carrier upwardly on its pivot to position the article in a perpendicular manner to permit of the surplus coating dripping from the article.

9. In a coating machine, a non-revoluble, pivoted, travelling carrier for the article to be coated and including a horizontal and a vertical arm, said horizontal arm pivoted at its inner end and said vertical arm extended from the outer end of the horizontal arm, means carried by the vertical arm for revolubly supporting the article to be coated, operating means carried by said arm for the article supporting means, a shifting block carried by the horizontal arm in proximity to its pivot, and a cam element arranged in the path of said block for shifting the carrier upwardly on its pivot to position the article in a perpendicular manner to permit of the surplus coating dripping from the article, and said means for revolubly supporting the article including a pivoted spring controlled element capable of being shifted to release the article.

10. In a coating machine a travelling article carrier including a non-revoluble body portion pivoted at its inner end and provided at its outer end with a pair of grippers for normally supporting the article to be coated horizontally within a bath, said carrier further including revoluble means extending lengthwise of and connected to the body portion for revolving the grippers and the article supported thereby within the bath during the travel of the carrier, a support for the carrier, and said support and carrier having co-acting means for shifting the carrier upwardly on its pivot to have the article clear the bath and to hold the article in a perpendicular position with respect to the bath.

11. In a coating machine a traveling article carrier including a non-revoluble body portion pivoted at its inner end and provided at its outer end with a pair of grippers for normally supporting the article to be coated horizontally within a bath, said carrier further including revoluble means extending lengthwise of and connected to the body portion for revolving the grippers and the article supported thereby within the bath during the travel of the carrier, a support for the carrier, said support and carrier having coacting means for shifting the carrier upwardly on its pivot to have the article clear the bath and to hold the article in a perpendicular position with respect to the bath, and means mounted on the support and coacting with the carrier during the travel thereof for successively holding it at an upward inclination as it moves towards the bath, lowering it towards when over the bath, maintaining it in a lowered position for a predetermined period as it travels over the bath, and for sustaining it at an upward inclination after the article has been shifted to a perpendicular position.

In testimony whereof, I affix my signature hereto.

FRANK T. HENRY.