Jan. 1, 1929. 1,697,436

E. B. POWELL

ARTICLE DIPPING APPARATUS

Filed Sept. 7, 1923 2 Sheets-Sheet 1

Fig. 1.

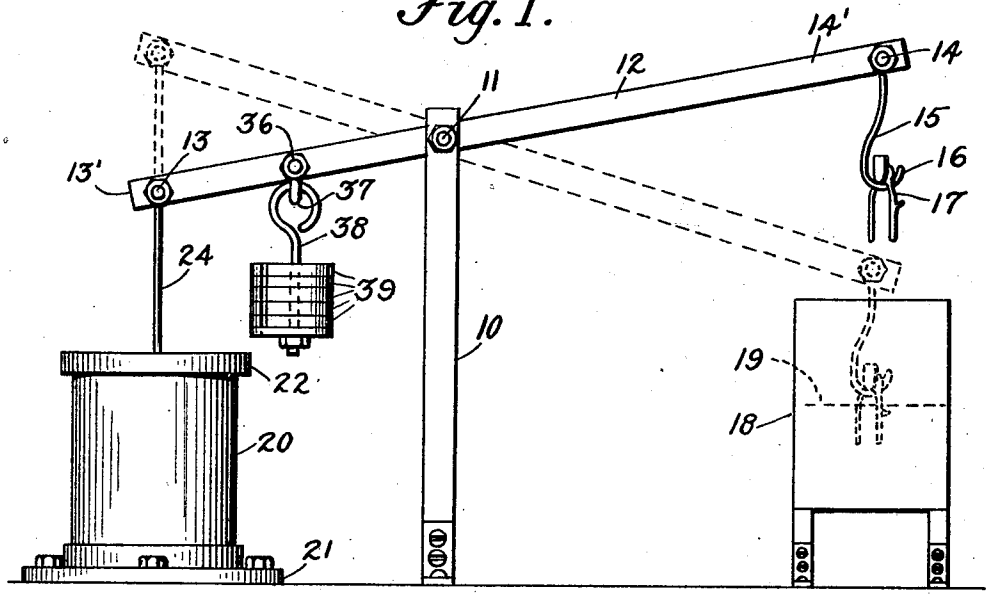
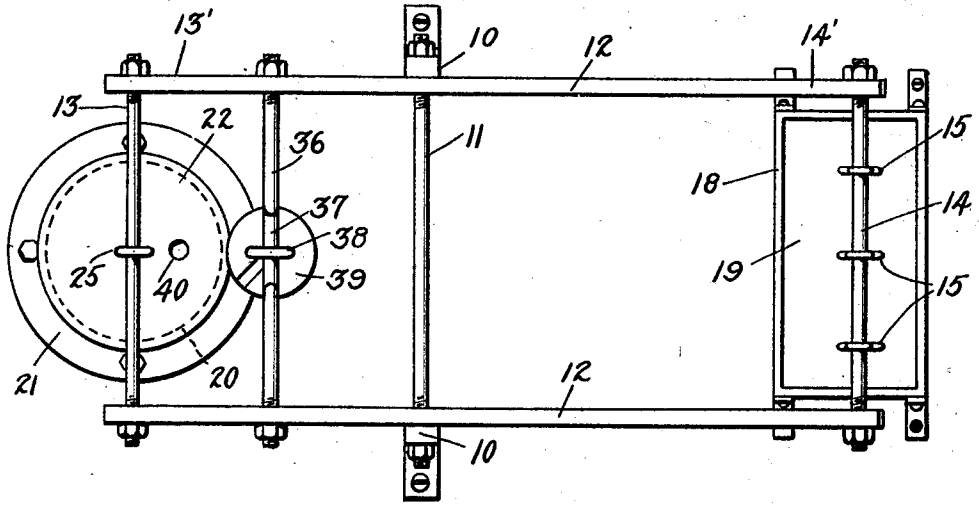


Fig. 2.



Inventor:
Everton B. Powell,

by Ira M. Jones.
Atty.

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Fig. 3.

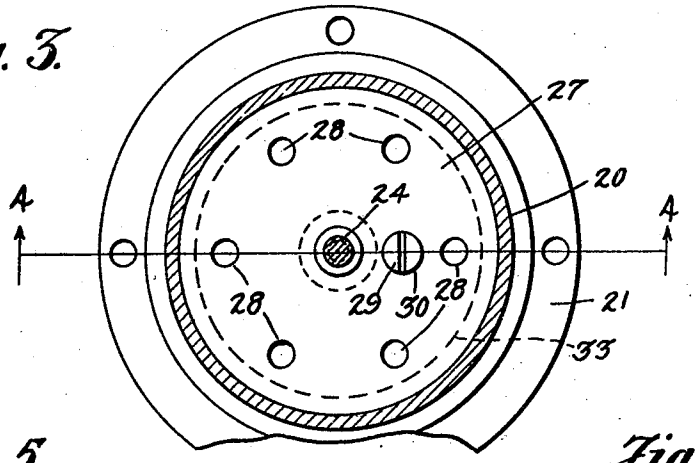


Fig. 5.

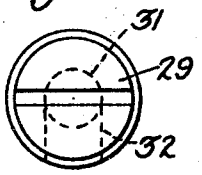


Fig. 6.

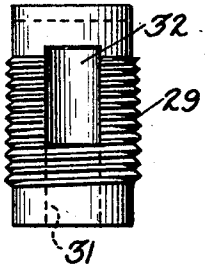
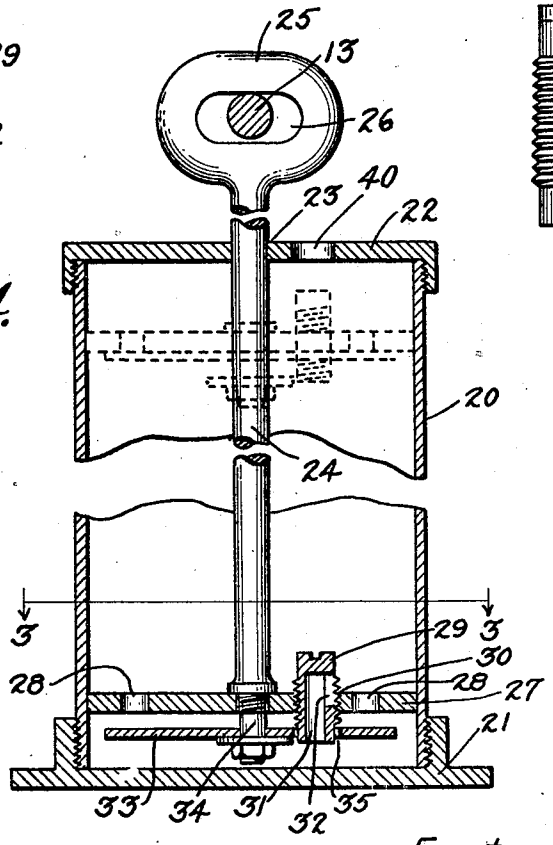


Fig. 4.



Inventor:
Everton B. Powell,

by Ira M. Jones
Atty.

Patented Jan. 1, 1929. 1,697,436

UNITED STATES PATENT OFFICE.

EVERTON B. POWELL, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO FREDERICK N. WINDRIDGE, OF CHERRYDALE, VIRGINIA.

ARTICLE-DIPPING APPARATUS.

Application filed September 7, 1923. Serial No. 661,466.

This invention relates to certain new and useful improvements in article dipping machines more especially designed for coating handles or other articles with celluloid or other material.

In dipping articles to apply a coating of celluloid or other material evenly thereto, it is necessary that the article be entirely immersed in a tank of liquid celluloid or other material and then slowly extracted therefrom permitting the celluloid to harden as the same is withdrawn and to prevent the formation of runs or uneven portions thereon. Heretofore, the articles have been immersed in the liquid celluloid or other material and then gradually extracted by manual means, the result being an uneven coating and furthermore involving considerable labor expense.

Having the above in mind, it is the primary object of this invention to provide mechanical means for gradually and evenly extracting or removing articles from the liquid celluloid or other material, whereby the material is applied to the article in an even film producing a smooth finish.

It is another object of this invention to provide a mechanism for slowly extracting or removing articles from the container of liquid celluloid or other material in which the speed of withdrawal may be readily adjusted.

This invention has for a further object to provide a rockingly mounted frame member, one end of which is adapted to support the article to be dipped and the other end of which is connected with a plunger, the downward stroke of which is checked, the end of the rocking frame connected with the plunger carrying weights whereby said end is gradually depressed against the action of the checking means and consequently the free end of the rocking frame and the articles carried thereby and immersed in the container of liquid material, slowly raised.

A still further object of this invention resides in the provision of a simplified construction of slow, article dipping machine which is of extremely simple design and construction and capable of ready installation at a minimum cost.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangements of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

In the accompanying drawings, I have illustrated one complete example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a side view of an apparatus embodying the features of my invention;

Figure 2 is a top plan view thereof;

Figure 3 is a transverse sectional view taken through the mechanism for checking the withdrawal of the articles from the celluloid or other material, said view being taken through Figure 4 on the plane of the line 3—3;

Figure 4 is a view partly in section and partly in elevation taken through Figure 3 on the plane of the line 4—4;

Figure 5 is a top plan view of the adjustable valve member for regulating the volume of fluid passing the checking member plunger during its downward movement, and

Figure 6 is a side view thereof.

Referring now more particularly to the accompanying drawings, in which like numerals designate like parts throughout the several views, the numeral 10 designates a pair of standards or supports connected at their upper ends by a cross rod 11 which pivotally mounts a rocking frame constructed of two spaced, side beams 12 connected at their opposite ends by cross rods 13 and 14.

The pivot point of the rocking frame is preferably spaced a greater distance from the cross rod 14 than cross rod 13 whereby the distance traveled by the end 14′ of the frame is greater than that traveled by end 13′. Suspended from cross rod 14 are a plurality of hooks or rack carrying members 15 to which a rack member 16 is adapted to be secured and from which the articles 17 to be coated with celluloid or any other material are suspended. Mounted beneath the rack carrying members 15, and adapted to receive the same when the adjacent end of the rocking frame is depressed, is a vat or container 18 filled with celluloid or other material, in a substantially liquid state, with which it is desired to coat articles 17.

Mounted beneath end 13′ of the rocking frame is a checking mechanism for slowing

the descent of the adjacent end of the rocking frame and consequently the upward movement of the end 14′ of the frame and the withdrawal of the articles 17 from the material 19. This mechanism is illustrated in the form of a cylinder 20, one end of which is closed by a base 21 adapted to be secured to the floor, or other support, and the other end of which is closed by a removable head or cap 22, the top of which is provided with a central bore or opening 23 through which passes a piston rod 24. The upper end of rod 24 is formed with an eye member 25 provided with an elongated slot or opening 26 through which cross rod 13 passes.

Mounted on the end of rod 24 within cylinder 20 is a piston head 27 having a plurality of openings or fluid passages 28 adapted to be opened to permit the free passage of fluid by the piston in its upward movement and closed during the downward movement of the piston to check or retard its return. During the descent of the piston, the fluid gradually leaks therepast through an adjustable bypass in a screw member 29 threaded in an opening 30 in the piston head and having a passage 31 therethrough, the end 32 of which is in the side of the screw above the piston head whereby its area may be diminished or increased by screwing member 29 thereinto or out of the piston head, respectively.

The means for closing openings 28 during the descent of the piston head consists of a plate or valve member 33 which is slidably mounted on a stud or projection 34 extended beyond the under side of the piston head, said plate having an opening 35 therein through which the lower end of member 29 passes to permit the unrestricted movement of the valve member on the stud 34. The interior of the cylinder is preferably filled with oil or any other fluid and after the articles to be dipped have been supported from the members 15, the end 14′ of the rocking frame is depressed to fully immerse the articles supported therefrom in the celluloid or other material 19, this depressing movement of the end of the rocking frame carrying the articles to be dipped being unobstructed by reason of the openings 28 being open to permit the free passage therethrough of the oil or other fluid in the cylinder.

Connecting the beams 12, intermediate pivot 11 and cross rod 13 is a cross rod 36, the intermediate portion of which is preferably provided with a loop or depressed part 37 from which is suspended a rod 38 adapted to readily removably support one or more weights 39. The weights 39, after the articles have been fully immersed in the material 19, tend to depress the end 13′ of the rocking frame connected with the checking device and gradually move the piston head downwardly as the fluid within the cylinder passes from the under side of the piston to the upper side thereof through bypass 31, the articles being thus slowly withdrawn or extracted from the material at an even rate.

Upon the articles being entirely extracted or withdrawn from the material 19 they are removed from the members 15 and carried to a drying room or a place of storage and the members 15 again charged with articles to be dipped and the end 14′ of the rocking frame depressed in the manner above described.

As will be readily apparent, the speed at which the articles are withdrawn from the material 19 may be readily regulated by either the changing of weights 39, the adjustment of bypass 31, or both. An opening 40 is provided in the head or cap 22 which registers with member 29 whereby the adjustment of the bypass may be accomplished when the piston is at or near its upper-most position.

What I claim as my invention is:

1. In a machine of the character described, an article carrying member movable to project an article carried thereby into a container of material with which the article is to be coated, means for moving said member to withdraw the article carried thereby from the material, and checking means for retarding the movement of the article carrying member by the first-named means whereby the article is withdrawn from the coating material at a substantially even speed.

2. In a machine of the character described, an article carrying member movable to project an article carried thereby into a container of material with which the article is to be coated, means for gradually moving said member to withdraw the article carried thereby from the material, said means permitting quick movement of said member to project the article carried thereby into the coating material, and adjustable means for regulating the speed at which the article is removed from the material.

3. In a machine of the character described, a pivotally mounted member adapted to suspend from its end the article to be coated, said member being movable on its pivot to dip the article carried thereby in a container of material with which it is desired to coat the same, means normally tending to move said member upwardly on its pivot to withdraw the article carried thereby from the coating material, and means for checking the upward movement of said member.

4. In a machine of the character described, a medially pivoted frame member, means carried by one end of the frame for suspending an article to be coated with material, and means connected with the other end of said frame member for normally gradually urging the first mentioned frame member end toward its uppermost position, whereby depression of said first mentioned frame member end to dip the article to be coated into a container of

coating material and the consequent release of said end will permit its automatic return to its uppermost position by said urging means.

5. In a machine of the character described, a medially pivoted frame member, means carried by one end of the frame for suspending an article to be coated with material, means connected with the other end of said frame member for normally urging the first mentioned frame member end toward its uppermost position, whereby depression of said first mentioned frame member end to dip the article to be coated into a container of coating material and the consequent release of said end will permit its automatic return to its uppermost position by said urging means, and means for checking the upward movement of said first mentioned frame member end whereby the article is slowly withdrawn from the coating material.

6. In a machine of the character described, a frame member, means pivotally mounting said frame, said means being nearer to one end thereof than the other, means carried by the end of the longer portion of the frame member for mounting an article to be dipped over a container having a coating material therein, means normally urging the longer portion of said frame member upwardly, and means engageable with the shorter portion of said frame member for checking the upward movement of the longer portion thereof.

7. In a machine of the character described, a frame member, means pivotally mounting said frame, said means being nearer to one end thereof than the other, means carried by the end of the longer portion of the frame member for mounting an article to be dipped over a container having a coating material therein, weight means carried by the shorter portion of said frame member and normally urging the longer portion thereof upwardly, and means engageable with the shorter portion of said frame member for checking the upward movement of longer portion thereof.

In testimony whereof I affix my signature.

EVERTON B. POWELL.