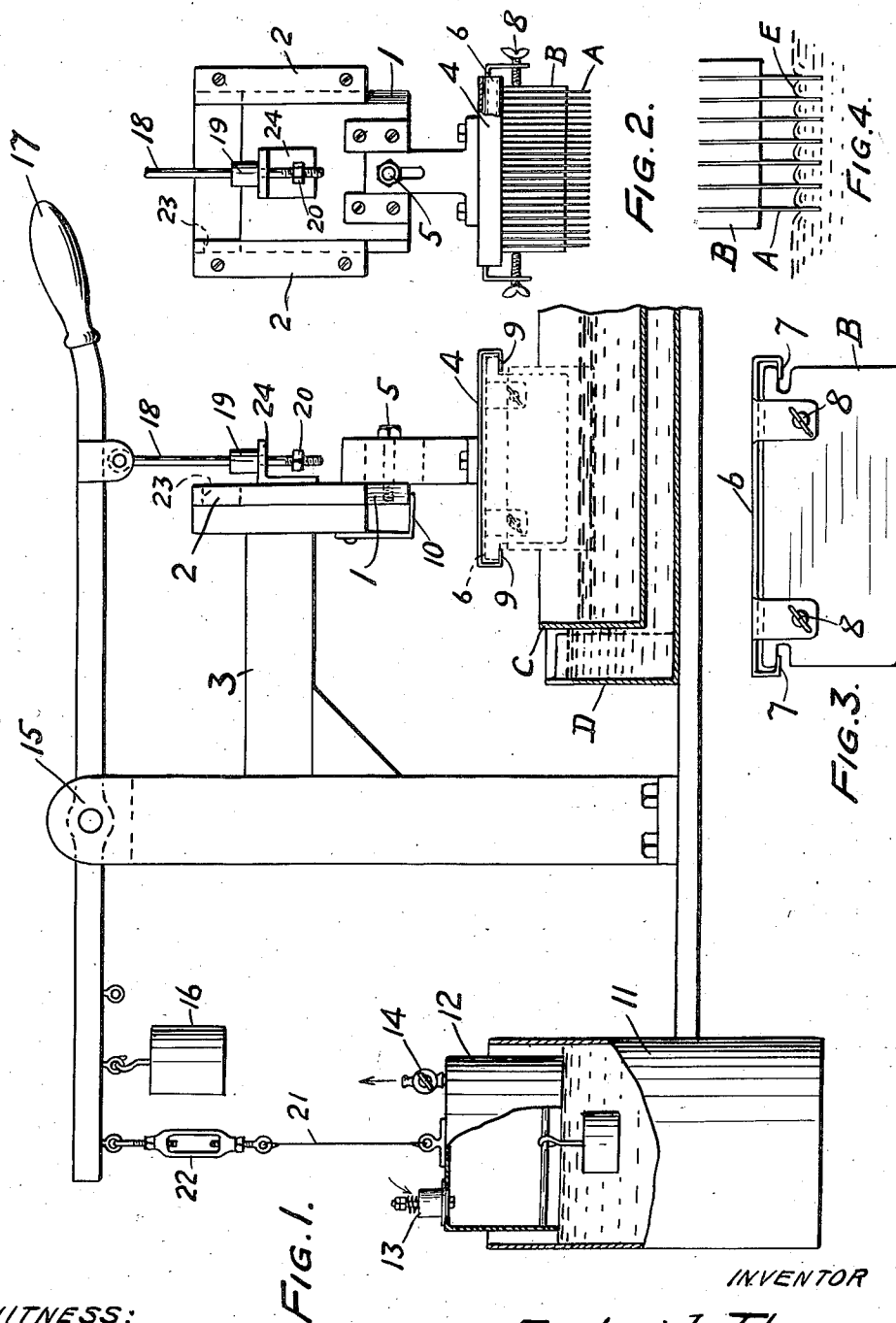


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DIPPING MACHINE
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WITNESS:

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FIG. 1.

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DIPPING MACHINE

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7 Claims. (Cl. 91—46)

The subject matter of the present invention is a dipping machine useful for dipping objects into a bath and it is particularly useful for dipping index cards into fluid coating material in such a way that the cards may be uniformly coated for the same distance from their edges.

Objects of the present invention are to provide for dipping a predetermined portion of objects into a coating bath with a dwell in the dipping motion to permit the surface of the bath to find its level and obliterate the convex meniscus affect of the dipping, and for withdrawing the objects with an initially slow motion of retraction to permit the objects to drain; to provide a machine which will carry out the object mentioned and generally to improve the dipping of objects into coating baths which are usually somewhat viscous or glutinous in such a way that the coating on a number of objects is uniform in extent.

Other objects of the invention will appear from the following description at the end of which the invention will be claimed.

Generally stated, the invention comprises a head slidably mounted for dipping movement, a stop for limiting the dipping movement of the head, a fluid checked operating weight, and an overbalanced pivotally mounted operating lever having a lost motion connection with the head and with the weight, whereby the head is dipped to the limit of the stop with a dwell at the end of its dipping motion, and retracted by the weight with an initially slow motion.

The invention also comprises the improvements to be presently described and finally claimed.

In the following description reference will be made to the accompanying drawing forming part hereof and in which,

Figure 1 is a side view with parts broken away of a machine embodying features of the invention.

Figure 2 is an end view of a portion of the machine.

Figure 3 is a side view of the carrier detached, and

Figure 4 is a diagrammatic view illustrative of the operation of the machine.

Referring to the drawing, there is a head and it is shown to comprise a block 1 slidably mounted in ways 2 carried by the frame 3 and also a carrier 4 adjustably connected with the block by the bolt or screw 5.

In the following description it will be assumed that the machine is to be used for dipping one of the edges into a coating bath in such a way that the coating on the index cards will be of uniform extent. The cards A are mounted in a

holder 6 having inturned ends 7. Boards or strips B rest upon the portions 7 of the holder and the cards A are arranged between them and clamped by the set screws 8. The holder 6 is detachably seated on the inturned edges 9 of the carrier 4. 10 is a stop carried by the frame 3 and adapted to limit the dipping movement of the head. C indicates a vessel containing the coating fluid and it is shown as floated in liquid contained in a vessel or a tank D. The vessel and tank are not claimed herein and their function is to maintain the fluid in the vessel C at a substantially constant level. At the dipping of the cards in the fluid there is a fluid checked operating weight. It comprises a reservoir 11 containing liquid, as water, and a weighted bell 12 having an inlet 13 for air provided with a check valve and a regulatable outlet connection 14 for the escape of air in restricted quantities. 15 is a pivotally mounted operating lever and it is overbalanced by the weight 16 so that the handle 17, when released, tends to rise. In the drawing the parts are shown in the positions occupied by them when the handle 17 is depressed, as by the hand of the operator, and is about to be released. There is a lost motion connection between the head and the lever 15. It is shown as a link 18 having limit stops 19 and 20 and slidable through a bracket 24 secured to the block 1. There is also a lost motion connection between the lever 15 and the bell 12, and it is shown at 21 as a flexible cord or wire, including a turn-buckle 22.

The mode of operation of the described machine may be explained as follows:—Assuming that a supply of cards A has been secured in the holder and carrier, and that the fluid in the vessel C is at the appropriate level, the handle 17 is depressed. The result of this is that the parts are brought into the positions shown against the stop 10, and in doing so the cards produce on the surface of the fluid in the tank C a series of convex meniscus effects, indicated at E in Figure 4. Because of the consistency of the coating fluid, and prior to the ascent of the handle 17, under the action of weight 16, there is a dwell in the movement of the cards of sufficient duration to permit the fluid to find its level and obliterate the meniscus effect and contact with the cards at the level of the fluid. This, together with the limiting action of the stop 10, ensures that the coating fluid will be applied to all the cards evenly and in repetition of the operation, since the level of the fluid is always the same, the coating on all of the cards, treated by the machine, is uni-

form. Of course, as the bell 12 is raised air is drawn into it and it floats for an interval of time because of the restricted character of the outlet 14. Referring again to the cards, the weight 16 turns the handle 17 counter-clockwise with the result that the stop 20 bears upon the bracket 24 and the connection 21 is slackened. As air escapes from the bell, it sinks gradually so that the cards are withdrawn from the fluid in the tank C slowly and are allowed to drain, and thereafter air having escaped from the valve 12 the bell descends rapidly and lifts the cards away from the fluid. It will be understood that the upward turning movement of the handle 17 is checked, for example, by stops at the top of the ways 2, which are indicated as at 23, but, of course, stops for this purpose can be variously located.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details of procedure and matters of mere form without departing from the spirit of the invention, which is not limited as to such matters or otherwise than the prior art and the appended claims may require.

I claim:

1. A dipping machine, comprising in combination, a head slidably mounted on a stationary support for dipping and removing movement, a stop mounted in the path of movement of said head for limiting the dipping movement of said head, a restrained operating weight, and a pivotally mounted operating lever stressed for removing movement and having a lost motion connection between said head and said lever on one side of said pivot and having a connection between said weight and said lever on the other side of said pivot, whereby the head is dipped to the limit of the stop and is retracted with a dwell at the end of its dipping movement during the taking up of the lost motion between said head and said lever and is retracted by said weight at the end of said dwell.

2. A dipping machine, comprising in combination, a head slidably mounted on a stationary support for dipping and removing movement and including a carrier and a detachable card holder and a member, a stop for said head mounted in the path of movement of said head and limiting said dipping movement, a fluid checked operating weight, a pivotally mounted lever stressed for removing movement, a rod connected to said lever on one side of said pivotal mounting and having spaced collars co-operating with said member to form a lost motion connection between said rod and said head, and a flexible connection interposed between said lever and said weight and connected to said lever on the opposite side of said pivotal mounting to said rod.

3. A dipping machine, comprising in combination, a head slidably mounted on a stationary support for dipping and removing movement, a stop mounted in the path of movement of said head for limiting the dipping movement of said head, a pivotally mounted operating lever stressed for removing movement and having a lost motion connection with said head, a reservoir, a bell dipping into the contents of said reservoir and provided with a one-way intake and with a discharge opening and with sufficient weight for sinking it into the contents of said reservoir, and a flexible connection connected to said bell and to said lever on the opposite side of said pivotal mounting from the connection with said head.

4. In a dipping machine, the combination comprising, a card carrier for detachably supporting a plurality of cards, a support holding said carrier for movement of said carrier in dipping and removing directions, a stop mounted on said support in the path of motion of said carrier for limiting the movement of said carrier in dipping direction, means for stressing said carrier towards said stop, motor means for overcoming the stress of said means and for moving said carrier away from said stop, and a lost motion connection between said carrier and said motor means, which disengages said carrier from said motor means and causes a dwell in the movement of said carrier away from said stop.

5. In a dipping machine, the combination comprising, a card carrier having means for detachably carrying a plurality of cards, a support holding said carrier for movement in dipping and removing directions, a stop mounted on said support in the path of motion of said carrier for limiting the movement of said carrier in dipping direction, a weight stressing said carrier away from said stop, and a check for retarding the initial movement of said weight and said carrier away from said stop and for accelerating the later movement of said weight and said carrier away from said stop.

6. A dipping machine, comprising in combination, a card carrier holding a plurality of cards thereon, a support mounting said carrier for movement in dipping and removing directions, a stop connected to said support in the path of movement of said carrier to limit the movement of said carrier in dipping direction, means for stressing said carrier towards said stop, motor means stressing said carrier away from said stop, a lost motion connection between said motor means and said carrier providing for a period of rest of said carrier against said stop before the movement of said carrier away from said stop caused by said motor means, a weight connected to said carrier stressing said carrier away from said stop, a flexible connection between said weight and said carrier allowing said motor means to move said carrier, and fluid-actuated means restraining the movement of said weight during the earlier part of the actuation of said carrier by said weight and freeing said weight for accelerated movement during the later actuation of said carrier by said weight.

7. In a dipping machine, the combination comprising, a card carrier for detachably holding a plurality of cards, a support on which said carrier is mounted for movement in dipping and removing directions, a stop mounted on said support in the path of movement of said carrier for limiting the movement of said carrier in dipping direction, means stressing said carrier in dipping direction towards said stop, a reservoir, a bell dipping in said reservoir and having sufficient weight to overcome the stress of said means and to stress said carrier away from said stop, a check-valve for admitting the atmosphere to the interior of said bell during the movement of said carrier towards said stop and for retaining atmosphere in the interior of said bell during movement of said carrier away from said stop, and a restrained outlet for said atmosphere from said bell, said reservoir being deep enough to provide for slow movement of said bell during the expulsion of the atmosphere from said bell and subsequent rapid movement of said bell.