July 4, 1944. E. W. DAVIS 2,352,773

COATING DEVICE

Filed Aug. 4, 1941

Fig. 1.

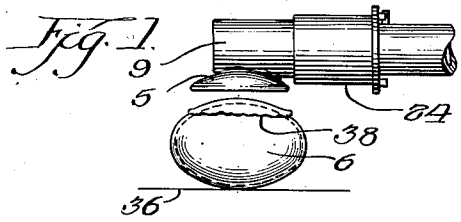


Fig. 2.

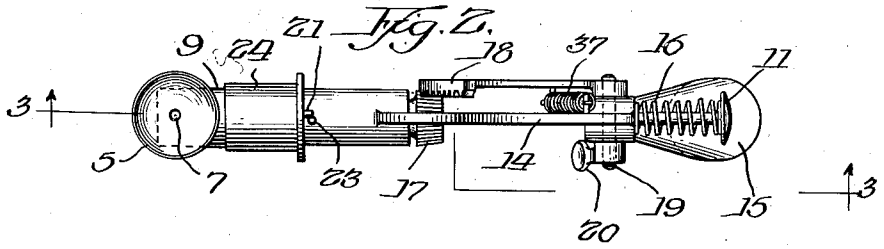


Fig. 3.

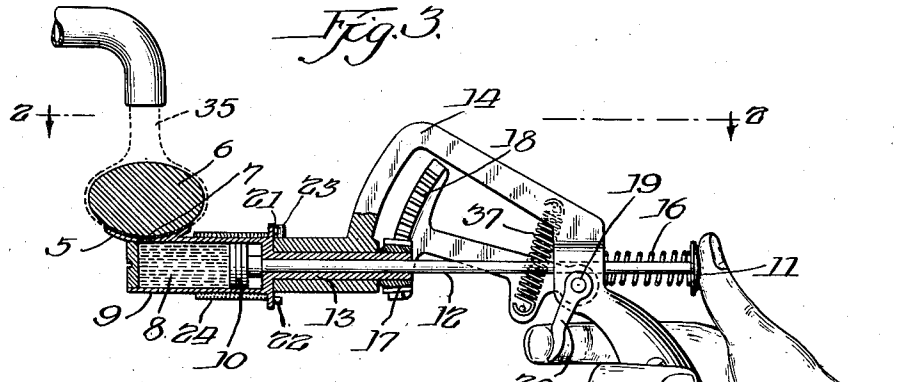
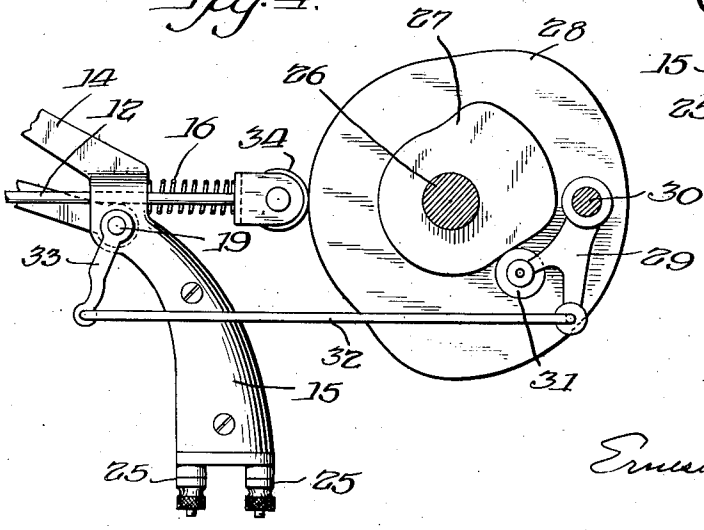


Fig. 4.



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UNITED STATES PATENT OFFICE

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COATING DEVICE

Ernest W. Davis, River Forest, Ill.

Application August 4, 1941, Serial No. 405,363

3 Claims. (Cl. 91—2)

My invention relates to coating devices, especially those used for coating articles with a fusible substance, such as might be employed for coating cakes with icing, or for coating ice cream, confectionery, or other articles, with melted chocolate, or other fusible substance.

The object of this invention is to provide a simple, effective device of the class described, which may be found useful for a variety of purposes, and which may be operated either manually, or by mechanical power.

In the embodiment of this invention illustrated in the accompanying drawing:

Figure 1 illustrates one of the articles which has been coated by the coating device;

Figure 2 is a plan view of the coating device as designed for manual operation;

Figure 3 is a sectional elevation of the device illustrated in Figure 2, the section being made on the line 3—3 in Figure 2; and

Figure 4 is a side elevation of the device as driven by mechanical power.

The holder 5 is constructed so that its upper surface, as shown in Figure 3, conforms in shape with a portion of the article 6, which is to be coated, and is provided with an orifice 7, through which the fusible substance 8 may be discharged. The cylinder 9 contains a piston 10 which is connected with a push button 11, by means of a piston rod 12. A hollow shaft 13, integral with the cylinder 9, is rotatably supported by the frame 14, which is connected with a handle 15, by means of which the device may be supported.

When the operator pushes the push button 11 with his thumb, a quantity of the fusible substance 8 in the cylinder 9 will be discharged through the orifice 7 and into the space between the holder 5 and the article 6. When the operator releases the push button 11, the spring 16 returns the push button 11 and the piston 10 to their normal positions, as shown in Figure 3.

The bevel pinion 17 is rigidly secured to the hollow shaft 13 and is rotated by the segment gear 18, which is rigidly secured to the shaft 19. The trigger 20 is also rigidly secured to the shaft 19, so that when the operator pulls the trigger 20, the holder 5 is rotated to the position shown in Figure 1. The pins 21 and 22 engage with the stop 23, to limit the rotation of the holder 5 to approximately 180 degrees. In order to designate clearly the different positions of the holder 5, the position shown in Figure 3 will be referred to hereinafter as the normal position, and the position shown in Figure 1 will be referred to as the inverted position.

An electric heating coil 24 is arranged to conduct heat to the cylinder 9 and the holder 5. The heating coil 24 is connected by conductors (not shown) to the binding posts 25, 25, to which a source of current may be connected capable of heating the heating coil 24.

In the mechanically driven construction shown in Figure 4, the rotatable cam shaft 26 carries the cams 27 and 28. The rocker arm 29 is pivoted on the stationary shaft 30, and carries the cam roller 31, which engages with the cam 27 to move the rocker arm 29, and thereby move the connecting rod 32, towards the right so as to actuate the trigger 33. The cam 28 engages with the cam roller 34, to actuate the piston rod 12. The parts not shown in Figure 4 are identically the same as the parts shown in Figure 3, as will be readily understood.

One method of operating this device is as follows: When the various parts of the device are in the relative positions shown in Figure 3, and when the cylinder 9 is filled with the fusible substance 8, and before the article 6 has been placed in the holder 5, the holder 5 is held under a stream of the fusible substance 35 so that the holder 5 is filled with the fusible substance. The article to be coated 6, is then placed in the holder 5, and the stream of fusible substance 35 is then allowed to flow over the entire surface of the article 6, which is not in contact with the holder 5. The holder 5 is then removed from the stream of fusible substance 35, or else the stream of fusible substance 35 is moved away from the holder 5, the excess fusible substance drips off the article 6 by the action of gravity, and the remaining coating will begin to harden due to loss of heat. That portion of the coating between the holder 5 and the article 6 will remain soft due to the heat supplied by the heating coil 24 and conducted to the holder 5.

When the coating has become somewhat hardened, the holder 5 is moved over a receiving surface 36, or, if preferred, the receiving surface 36 may be moved under the holder 5, the operator pulls the trigger 20, and the holder is rotated to the inverted position above the receiving surface, as shown in Figure 1. The article 6 then tends to fall from the holder 5 by the action of gravity, but may be prevented from doing so by the adhesion of the fusible substance between the holder 5 and the article 6. Then if the push button 11 is depressed, a quantity of the fusible substance 8 will be discharged through the orifice 7 and against the article 6, causing the article 6 to fall upon the receiving surface 36.

While the push button 11 is still depressed, the trigger 20 is released, thereby permitting the spring 37 to restore the holder to the normal position, as shown in Figure 3. With the push button still depressed, the holder 5 is again held under the stream of fusible substance 35, and the push button is then released, thereby permitting the spring 16 to move the piston 10 towards the right, and thereby refilling the cylinder 9 with the fusible substance, whereby the device is prepared for the next cycle of operation.

When the physical characteristics of the fusible substance are such that the action of gravity will effectually separate the article from the holder without the application of heat, the heating coil 24 may be omitted; or if the weight of the article 6 is sufficient to cause effective separation of the article 6 from the holder 5, then the cylinder 9, piston 10, and push button 11, may be omitted.

The portion of the fusible substance discharged through the orifice 7 tends to form a line 38 on the coated article as soon as it drops from the holder 5. By properly timing the cooling period before the article 6 is deposited, this line fuses into the lower coating and is then imperceptible.

The embodiment of my invention as herein shown and described may be modified in many ways without departing from the spirit of the invention, the scope of which is to be limited only by the following claims.

I claim:

1. In a device for coating articles with a fusible substance, a supporting structure; a holder for holding an article to be coated, said holder having a receiving surface conformed to the shape of a portion of said article; means for movably securing said holder to said supporting structure, said holder being movable to normal and inverted positions; means for moving said holder alternately to its normal position and its inverted position, in which latter position said article is underneath said holder whereby the action of gravity tends to separate said article from said holder; means for introducing a quantity of said fusible substance between said article and said holder whereby to assist the action of gravity in separating said article from said holder; and means for heating said holder and said quantity of fusible substance.

2. In a device for coating articles with a fusible substance, a supporting structure; a holder for holding an article to be coated, said holder having a receiving surface conformed to the shape of a portion of said article; means for movably securing said holder to said supporting structure, said holder being movable to normal and inverted positions; means for moving said holder alternately to its normal position and its inverted position, in which latter position said article is underneath said holder whereby the action of gravity tends to separate said article from said holder; and means for introducing a quantity of said substance at fusing temperature between said article and said holder whereby to assist the action of gravity in separating said article from said holder.

3. In a device for coating articles with a fusible substance, a supporting structure; a holder for holding an article to be coated, said holder having a receiving surface for receiving said article, and said surface having an aperture therein; means for movably securing said holder to said supporting structure, said holder being movable to normal and inverted positions; means for moving said holder alternately to its normal position and its inverted position, in which latter position said article is underneath said holder whereby the action of gravity tends to separate said article from said holder; and means for discharging a quantity of said fusible substance at fusing temperature through said orifice and against said article whereby to assist the action of gravity in separating said article from said holder.

ERNEST W. DAVIS.