May 15, 1945. C. M. McVEY 2,375,805

COATING MACHINE

Filed Sept. 15, 1942

Fig. 1.

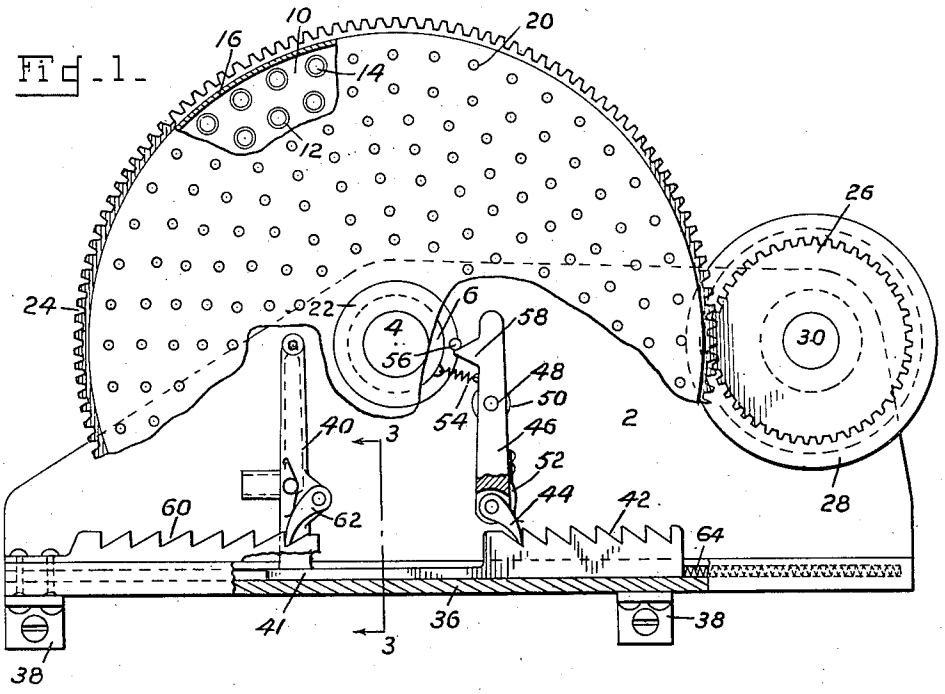


Fig. 2.

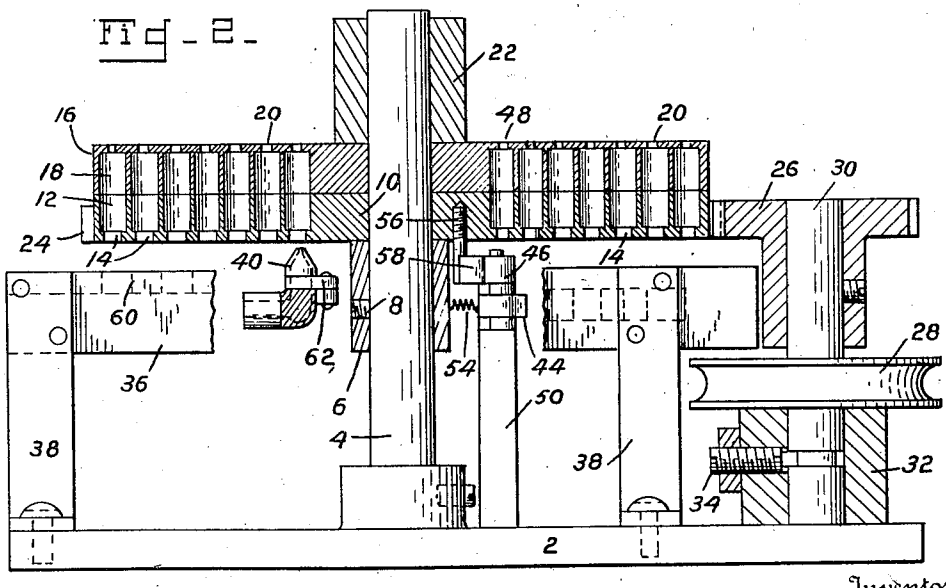
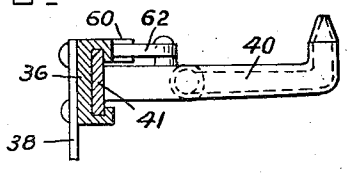


Fig. 3.



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UNITED STATES PATENT OFFICE

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COATING MACHINE

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Application September 15, 1942, Serial No. 458,474

7 Claims. (Cl. 91—44)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a machine for treating articles by spraying, particularly to coating the insides of detonator cups with a protective paint.

It is the object of this invention to provide a machine which automatically coats articles with a protective paint, although its usefulness is not so limited. The articles to be treated are mounted in rows on a holder. A spray nozzle is mounted for movement relatively to the holder, both as to the articles in any one row and as to the rows. Movement from article to article in any row is accomplished by relative rotation, and movement from row to row is accomplished by a pawl and rack mechanism actuated by a cam by said relative rotation.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which:

Fig. 1 is a plan view of a device made according to my invention, with parts broken away and in section.

Fig. 2 is an elevational view, with parts broken away and in section.

Fig. 3 is a view in section substantially on line 3—3 of Fig. 1.

Referring to the drawing in detail, 2 shows a base which supports a shaft 4 on which is mounted a thrust sleeve 6, secured by set-screw 8. A holder 10 is mounted for rotation on shaft 4, being supported by thrust sleeve 6. Holder 10 is provided with means to support a plurality of articles to be treated such as detonator cups, not shown. This means comprises a plurality of cavities 12 which are arranged in rows. Where, as in this case, holder 10 is arranged for rotation relative to the spray nozzle, the rows are arranged in concentric circles. Access to the cavities is provided through holes 14 in the bottom of the holder. A cover plate 16 having corresponding cavities 18 is provided when desired. Holes 20 may be provided to permit access to cavities 18, as where the article sticks and it is necessary to push an ejector rod through the hole to remove the article. A weight 22 may be provided to hold cover 16 in place. Holder 10 is preferably provided with means for rotating it relatively to the spray nozzle, such as ring gear 24 on holder 10, engaged by pinion 26 driven by belt pulley 28 through shaft 30. Any suitable power source, not shown, may be connected to pulley 28. Shaft 30 may be rotatably mounted in boss 32 on base 2 by means of retainer screw 34, as shown.

A track 36 is supported on legs 38. Track 36 is channel-shaped in cross section (Fig. 3) to provide for movement therealong of spray nozzle 40 mounted on slide 41. Also mounted on slide 41 is a rack 42. A pawl 44 cooperates with rack 42 to move the nozzle from row to row. Pawl 44 is mounted on rocker arm 46 pivoted on pin 48 at the top of post 50. Spring 52 on arm 46 biases pawl 44 into engagement with the rack, and spring 54 biases the rocker arm counterclockwise as seen in Fig. 1 to effect movement of the rack. A pin 56 on holder 10 cooperates with cam surface 58 to turn arm 46 clockwise, tensioning spring 54.

A second rack 60 is provided on track 36. A pawl 62 on nozzle 40 cooperates with rack 60 to hold nozzle 40 against movement during the return stroke of pawl 44.

Operation.—The parts are shown at the end of travel of the nozzle across the rows of cavities. With the cavities full of articles to be treated by spraying, nozzle 40 will be under the circle of holes on the periphery of holder 10, at the left in Fig. 1. Paint sprays through the nozzle, into the cavities through holes 14, as the holder rotates. When the holder has turned through one revolution, cam 58 is pushed outward by pin 56, winding up spring 54 and moving pawl 44 back into contact with the next tooth on the rack. As the pin passes the cam, spring 54 moves the rack and nozzle to the right, into position to spray the next circular row of articles. Pawl 62 and rack 60 keep nozzle 40 from being moved to the left by the initial movement of arm 46 and pawl 44. A light compression spring 64 may be used in the track if desired to prevent movement of the nozzle past an indexed position. Then, to return the parts to starting position from the position of the drawing, all that would be required is manual release or disengagement of pawls 44 and 62, and spring 64 would return the slide 41, rack 42, and nozzle 40 to the starting position.

I claim:

1. In combination, a holder, means to mount articles in a plurality of rows on the holder, a spray nozzle, means to effect relative movement of the holder and the nozzle from article to article in any one row, and means including a pawl

and rack to effect relative movement of the holder and the nozzle from row to row.

2. An article spraying machine comprising: a holder having a plurality of cavities arranged in rows, a cover plate for the holder having corresponding cavities, each cavity in the holder having communication through a hole in the holder, a spray nozzle positioned to spray through a hole into the corresponding cavity, means to effect relative movement of the holder and the nozzle from hole to hole in any one row, and means to effect relative movement of the holder and the nozzle from row to row.

3. In a device for spraying articles, a rotatable holder, means to mount articles in a plurality of rows on the holder, a spray nozzle, means carried by the holder, and means mounted below the holder cooperating with said holder means to automatically effect relative movement of the holder and nozzle to spray successive articles in the same row, and means to automatically effect relative movement between the holder and nozzle from row to row.

4. In a device for spraying articles, a rotary holder, means to mount articles in a plurality of concentric rows on the holder, a spray nozzle adapted to project the spray upward toward the articles in the holder, means for rotating the holder to effect relative movement of the nozzle and holder to spray successive articles in the same row, and means actuated by the holder to move the nozzle to spray successive rows of the articles.

5. In a device for spraying articles, a holder, means to mount articles in a plurality of rows on the holder, a track adjacent the holder, a rack mounted for sliding movement along the track relative to the holder, a spray nozzle carried by the rack, means for moving the holder relative to the nozzle for spraying successive articles in the same row, and means actuated by the holder to move the rack and spray nozzle to spray successive rows of articles.

6. A machine for spraying articles, a rotary holder, means to mount articles on the holder in a plurality of concentric rows, a track adjacent the holder, a rack mounted for sliding movement along the track relative to the holder, a spray nozzle carried by the rack, means for rotating the holder to spray articles in the same row in the holder, a spring restrained pivoted lever, means on the holder engaging the lever to rock the same upon each revolution of the holder, a pawl carried by the lever and engaging the rack to move the rack to move the spray nozzle to spray successive rows of articles.

7. The invention of claim 6 characterized in that there is a second rack stationary with respect to the holder, and a pawl carried by the nozzle cooperating with the rack to prevent movement of the nozzle upon initial movement of the lever.

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