Nov. 29, 1932. E. W. LITTLE 1,889,676

PAINT APPLYING MACHINE

Filed July 5, 1929 4 Sheets-Sheet 1

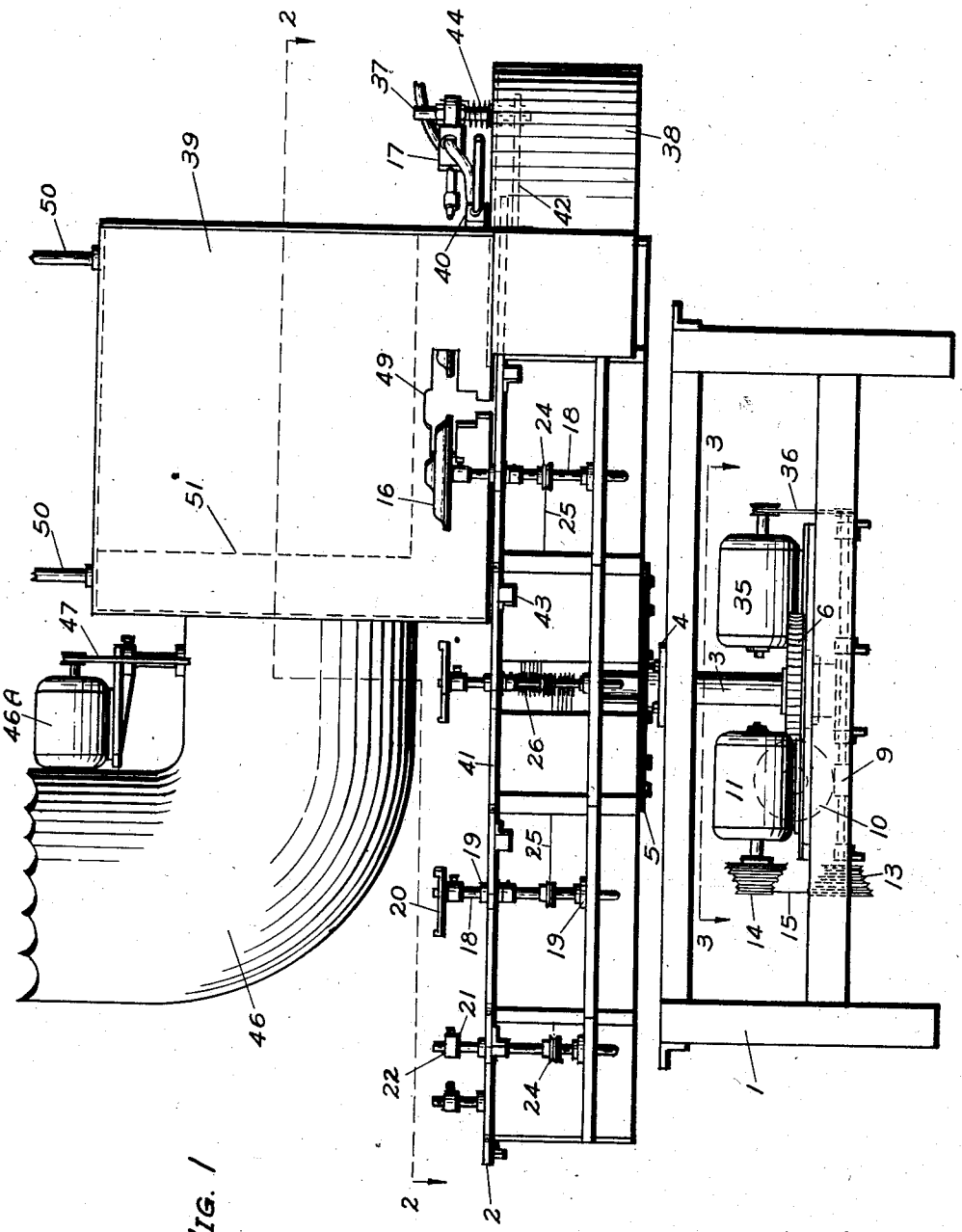


FIG. 1

Inventor

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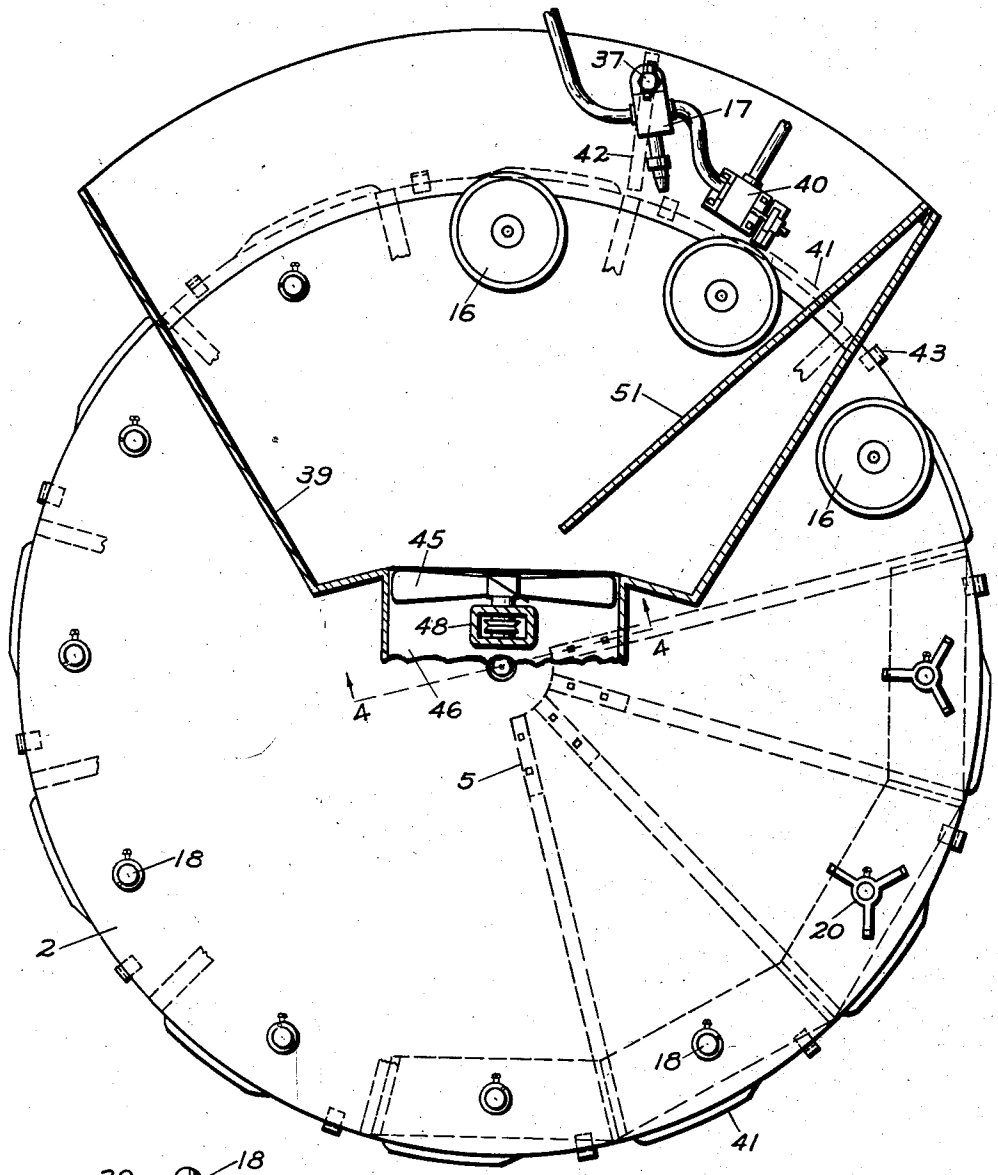
Attorney

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PAINT APPLYING MACHINE

Filed July 5, 1929 4 Sheets-Sheet 2

FIG. 2



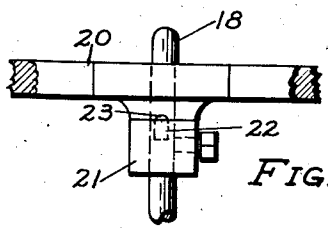


FIG. 6

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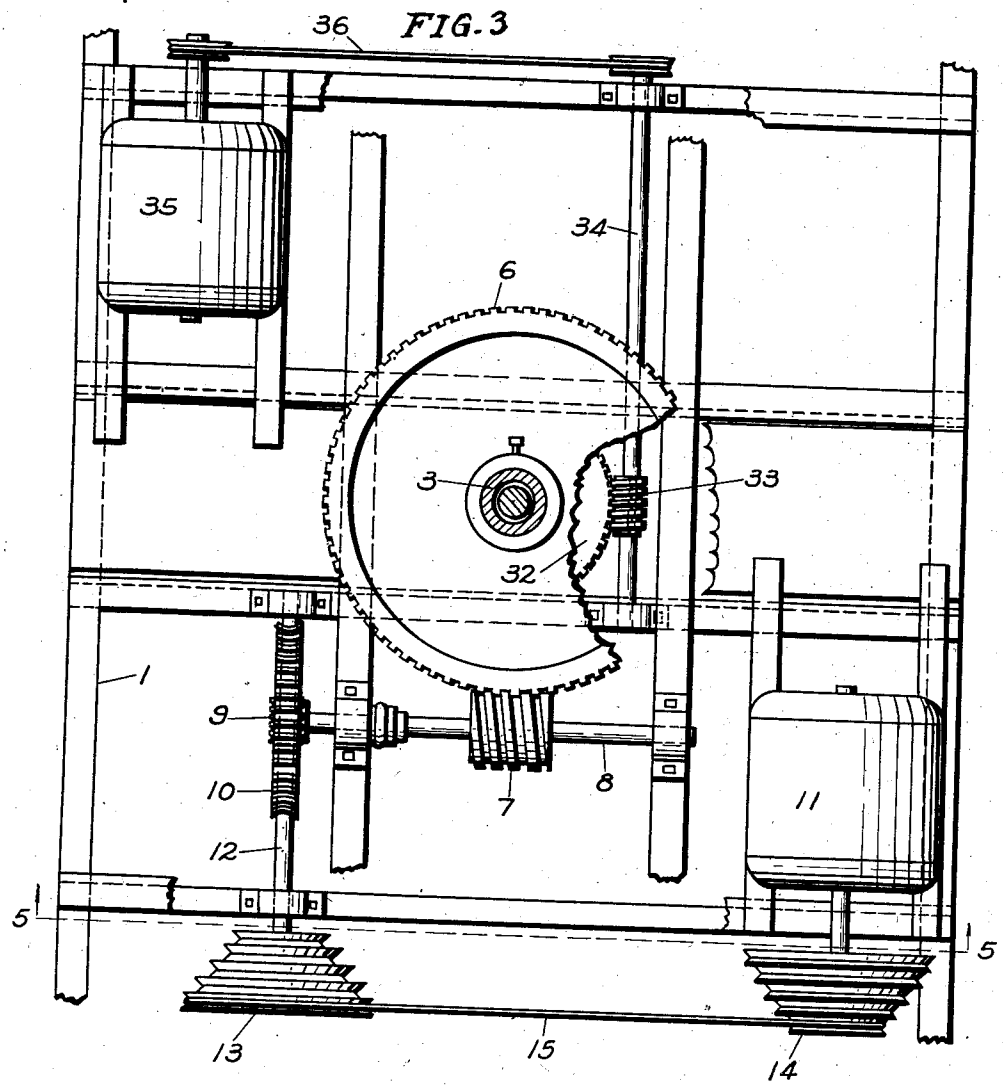
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PAINT APPLYING MACHINE

Filed July 5, 1929 4 Sheets-Sheet 3

FIG. 3



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PAINT APPLYING MACHINE

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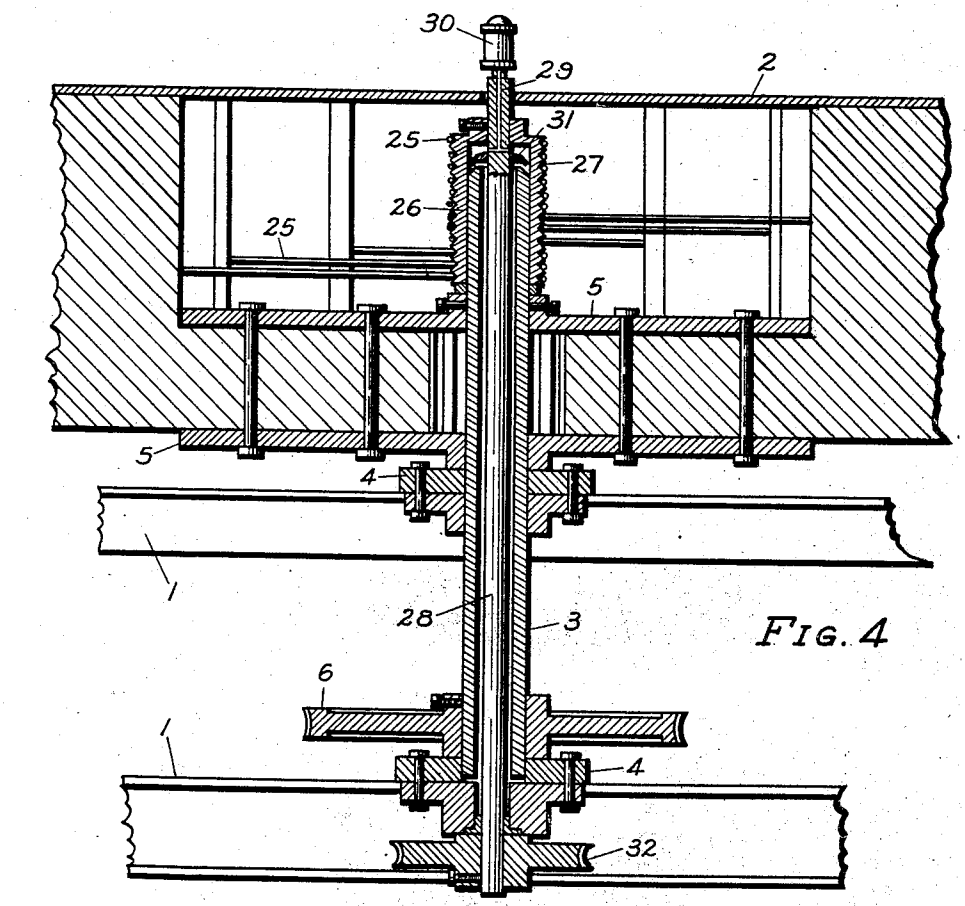


FIG. 4

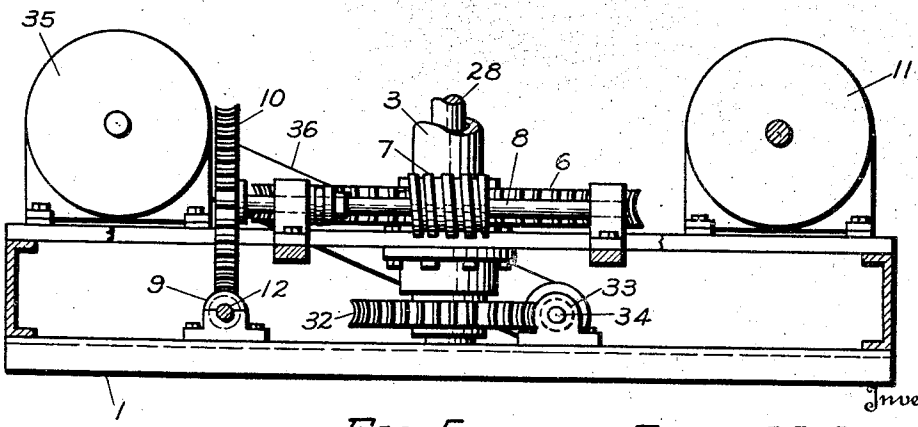


FIG. 5

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Patented Nov. 29, 1932

1,889,676

UNITED STATES PATENT OFFICE

EARL W. LITTLE, OF INDIANAPOLIS, INDIANA

PAINT APPLYING MACHINE

Application filed July 5, 1929. Serial No. 375,983.

This invention relates to means for applying paint and the like to objects and is primarily designed for spraying paints and varnishes onto parts of bird cages, although it will be understood that it may be used for the same purposes with other and various articles.

One feature of the invention is the provision of means for mounting a plurality of articles upon a revolving platform and arranged to be successively brought into position to be treated.

A further feature of the invention is the provision of means for imparting rotating motion to said platform.

A further feature of the invention is the provision of means for supporting the articles upon the platform.

A further feature of the invention is the provision of means for setting up rotation of the articles as they are carried around with the platform.

A further feature of the invention is the provision of means for normally retaining the article in fixed relation with the rotating means therefor.

A further feature of the invention is the provision of means for rotating said platform and said article supporting means at different speeds.

A further feature of the invention is the provision of means for increasing or decreasing the rotating speed of said platform.

A further feature of the invention is the provision of a spray gun mounted in position to spray liquids on the articles as they pass a prescribed point.

A further feature of the invention is the provision of means for automatically operating the spray gun.

A further feature of the invention is the provision of means for moving the nozzle of the spray gun in the arc of a circle for training the same on the passing article.

A further feature of the invention is the provision of a hood adapted to confine the spraying material.

A further feature of the invention is the provision of means for creating a suction in the hood for collecting the residue of the spraying material and fumes therefrom and conveying them to a suitable discharge point.

A further feature of the invention is the provision of means for creating induced suction at prescribed points within the hood.

A further feature of the invention is the provision of means for lubricating the main bearings of the device.

Other objects and advantages will be hereinafter more fully set forth and pointed out in the accompanying specification.

In the accompanying drawings which are made a part of this application,

Figure 1 is a side elevation of the machine.

Figure 2 is a horizontal sectional view thereof as seen along line 2—2, Fig. 1.

Figure 3 is an enlarged detail sectional view as seen along line 3—3 of Fig. 1.

Figure 4 is an enlarged detail sectional view as seen along line 4—4, Fig. 2.

Figure 5 is a similar view as seen along line 5—5, Fig. 3.

Figure 6 is an enlarged detail side elevation of one of the article supports.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, the numeral 1 designates a frame, which may be constructed of any suitable material, above which is mounted a platform 2, a hollow shaft 3 being employed for supporting the platform above the frame. The lower portion of the shaft 3 extends through bearings 4 on parts of the frame 1, while the upper end thereof extends through and is secured to spiders 5 carried by the platform 2, the shaft being rotatable in its bearings.

Fixed to the shaft 3, adjacent its lower end, is a worm gear 6, with which cooperates a worm 7, on a shaft 8, said shaft 8 being driven through the medium of a second worm 9 and gear 10 and a motor 11, the shaft 12, on which the worm 9 is mounted, having a variable speed pulley 13 thereon, while the shaft of the motor 11 has a similar pulley 14 attached thereto, so that by properly positioning the belt 15 on said pulleys, the speed at which said shaft 3 is rotated may be increased or decreased, and as the platform 2 is fixed to said shaft 3, the rotating travel of said

platform will be correspondingly increased or decreased.

The platform 2 is designed to carry a plurality of articles to be sprayed with paint or the like, the base 16 of a bird cage being shown in this instance, and in order to rotate the articles as they are carried past a spray gun 17, a plurality of spindles 18 are rotatably mounted in bearings 19 on parts of the platform 2, on the upper ends of which are mounted supporting brackets 20, and these brackets may be conveniently constructed for supporting various kinds of articles. Each spindle 18 is provided with a collar 21, fixed to the spindle at any convenient point above the surface of the platform 2, said collar preferably having an upwardly projecting pin 22 designed to cooperate with a recess 23 in the base of the bracket 20, so that said bracket will be held normally stationary on the spindle. The upper end of the pin 22 is preferably rounded, however, so that when the article is being removed from the bracket, the bracket will ride over the end of the pin and not be caused to rotate therewith, hence the article may be removed from the bracket without marring the coating of paint thereon.

Each spindle is rotated independently of the rotation of the platform 2, by placing thereon a sheave 24 around which passes a belt 25, said belt passing around an elongated driving pulley 26, said pulley preferably having an individual groove 27 therearound for the reception of each individual belt. The elongated pulley 26 is mounted on a shaft 28, which projects centrally through the hollow shaft 3 and beyond the ends thereof, and is spaced from the walls of said hollow shaft. The interior of the pulley 26 has a bearing fit on the exterior of the upper end of the hollow shaft 3, and in order to lubricate the bearing surfaces between these elements, a bore 29 is formed lengthwise of the upper end of the shaft 28, which conveys lubricant from the oil cup 30 into the upper hollow portion of the pulley 26, a shield 31 being positioned around the shaft 28, which causes the lubricant to trend towards the wall of the pulley and descend between the face of the pulley and the shaft 3.

The lower end of the shaft 28 has a worm gear 32 attached thereto with which cooperates a worm 33, mounted on a shaft 34, said shaft being driven from a motor 35, through the medium of a driving belt 36, thereby driving the shaft 28 and parts associated therewith from a source different from the driving means for the platform, consequently the spindles may be driven at a different speed from that of the platform.

The spray gun 17 may be operated manually or automatically, but in this instance it is shown as automatically operated by mounting the same on a vertically adjustable shaft 37, said shaft being attached to the base 38 of a hood 39 and in juxtaposition to the edge of the platform 2. The operating trigger 40 for the spray gun 17 is also positioned adjacent the edge of the platform 2 and is automatically operated by projecting parts of the platform, in this instance, cams 41, which are arranged at intervals around the edge of the platform.

In order to cause the nozzle end to travel with the article being sprayed, a lever 42 is attached to the lower end of the shaft 37, which is swung in one direction by placing blocks 43 at suitable intervals on the platform 2, which strike against the free end of the lever 42 and by adjustably attaching the lever to the shaft 37, duration of the rotating action may be increased or decreased, as desired. The nozzle of the spray gun is returned to its initial position by means of a spring 44, or other suitable means.

In one portion of the hood 39 is placed a suction fan 45, said fan being entered in the end of a pipe 46, through which the odors and spray from the paint or the like is carried to any suitable discharge point, preferably to the exterior of the building, thus preventing the paint settling on objects within the building or coming in contact with the attendant. The fan 45 is preferably driven from a motor 46A, through the medium of a belt 47, that portion of the belt passing within the pipe 46, passing through a hollow bracket 48, which bracket not only serves to protect the belt from the paint, but also forms a support for the fan 45.

The hood 39 is enclosed at its top and bottom and on three sides thereof, two of the side walls having openings 49 therethrough for the passage of the spindles 18 and the articles carried thereby, said opening being preferably shaped coincident to the shape of the article being treated, and if preferred, removable panels (not shown) may be provided each having a particular shaped opening. The hood may be supported in any suitable manner over the platform 2, as by means of rods 50, which extend from the top of the hood to the ceiling of a building or other suitable supporting means.

In order to increase the suction action of the fan 45 at certain parts of the hood, particularly adjacent the openings 49 through which the article enters the hood, a partition 51 is hinged within the hood so that it may be swung back and forth to regulate the degree of suction adjacent the opening 49, through which the article enters the hood.

In operation, as the platform rotates past a given point, an article to be sprayed is placed onto its individual supporting brackets 20 and as said articles pass by the spray gun 17, paint or the like is discharged from the gun onto the article, until the article has passed beyond the gun, the article will have been thoroughly covered with paint or the

like. As soon as the lever 42 is released from each succeeding operating block 43, the tension of the spring 44 will instantly return the spray gun to initial position ready to discharge the contents thereof onto the next approaching article.

After the treated articles 16 have reached a prescribed point in the rotation of the platform, they are manually removed from their respective brackets 20 and by providing the projecting pins 22 and shaping them so that they will readily release from the recesses 23, when the bracket is grasped by the operator and held against rotation, the articles may be readily removed from the brackets without marring or mutilating the treated surface of the article.

The spray gun 17 is normally trained so that the majority of the spray therefrom will travel towards the opening 49 through which the article enters the hood, the proper adjustment of the partition 51 will more or less divide the suction created by the fan 45, thus creating a sufficiently increased, suction between the partition and the opening 49 nearest which it is located, to prevent any quantity of spray or fumes to discharge through such opening.

It will be understood, of course, that the spraying operation may be done manually, the operation of the machine, other than the spray gun, being the same in both instances, the only difference being that the spray gun is manipulated by hand.

While I have illustrated in a general way, certain instrumentalities which may be employed in carrying my invention into effect, it is evident that many modifications may be made in the various details, without departing from the scope of the appending claims, it being understood that my invention is not restricted to the particular examples herein described.

What I claim is:

1. A means for applying paint or the like to articles comprising a platform, means for constantly rotating the same, means for carrying a plurality of articles on said platform, means for constantly rotating said articles independently of said platform, means for applying paint or the like to said articles as they pass a given point, a hood through which said articles pass when being treated, a partition hinged within said hood, and a suction means for removing fumes and the like from said hood.

2. A means for spraying paint or the like on articles while in motion, comprising a constantly rotating member, spindles rotatably mounted on said rotating member, means on said spindles for carrying articles to be treated, means for constantly rotating said spindles, a hood through which said articles pass while being treated, a suction means for collecting the fumes and excess spray and remove the same from the interior of the hood and an adjustable partition within the hood for regulating the suction action therein.

3. A means for applying paint or the like to articles while in motion comprising article carrying means, continuously rotating means for carrying the articles in succession past a given point, means for constantly rotating said article carrying means and the articles thereon, a hood through which said articles travel, means for discharging paint or the like onto said articles as they pass through said hood, a suction creating means for collecting fumes and particles of spraying paint, and adjustable means for increasing or decreasing the suction action within the hood.

4. In a means for applying paint or the like to articles comprising a platform, article carrying means mounted thereon, a hollow shaft carrying said platform, a solid shaft extending through said hollow shaft and spaced therefrom, an elongated hollow pulley for operating said article carrying means, said pulley being mounted on the solid shaft and extending over and bearing on the end portion of the hollow shaft the upper portion of said pulley forming a lubricant reservoir, means for carrying lubricant downwardly through said solid shaft and into the hollow of said pulley, and a shield on said solid shaft for causing the lubricant to pass to the walls of said pulley and pass between the same and said hollow shaft.

5. Means for applying paint or the like to articles comprising a platform, spindles rotatably mounted on said platform, collars adjustably mounted on said spindles, an article carrying bracket for each spindle, and means between said collar and article carrying bracket for causing the article carrying bracket to normally rotate with said spindle, said latter means being arranged for permitting said bracket to remain stationary during the removal of an article therefrom.

6. Means for applying paint or the like to articles comprising a platform, spindles carried by said platform, means for rotating said spindles independently of said platform, an article carrying bracket for each spindle having a recess therein, and a pin carried by parts of the spindle for engagement with said recess and normally cause said bracket to rotate with said spindle, the end of said pin being shaped to ride out of said recess when the bracket is held against rotation, whereby the article may be removed from the bracket without marring the same.

In testimony whereof, I have hereunto set my hand on this the 28 day of June, 1929, A. D.

EARL W. LITTLE.