

Oct. 12, 1943.

R. S. THOMPSON

2,331,516

PAINTING APPARATUS

Filed June 9, 1941

2 Sheets-Sheet 1

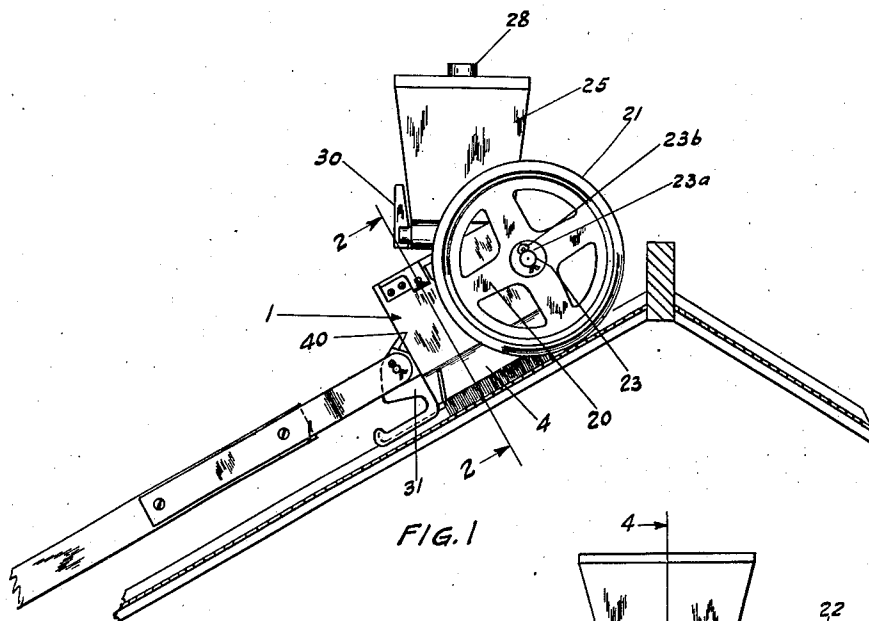


FIG. 1

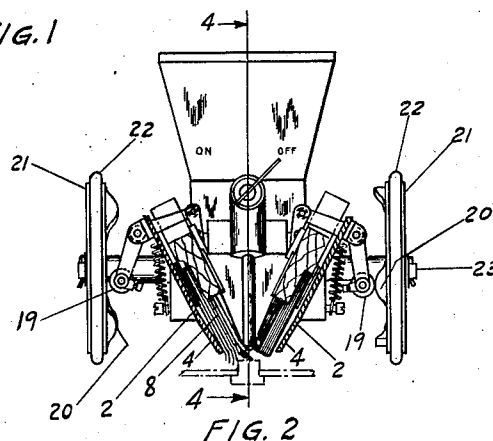


FIG. 2

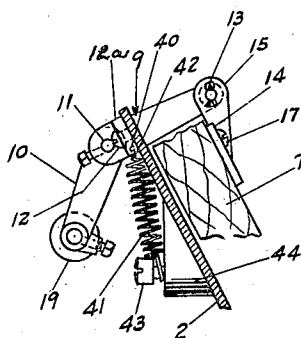


FIG. 5

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2 Sheets-Sheet 2

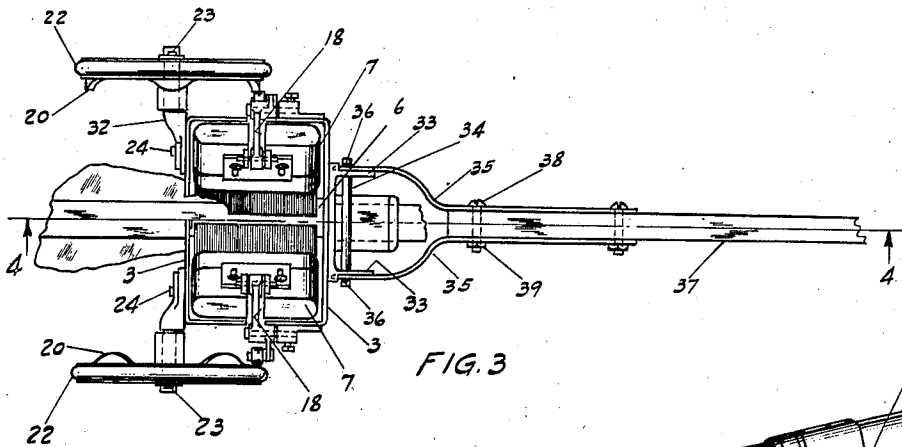


FIG. 3

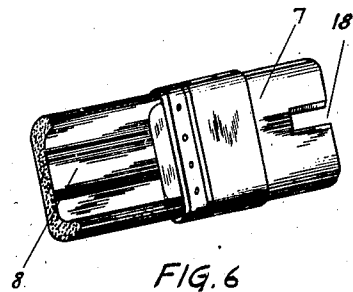


FIG. 6

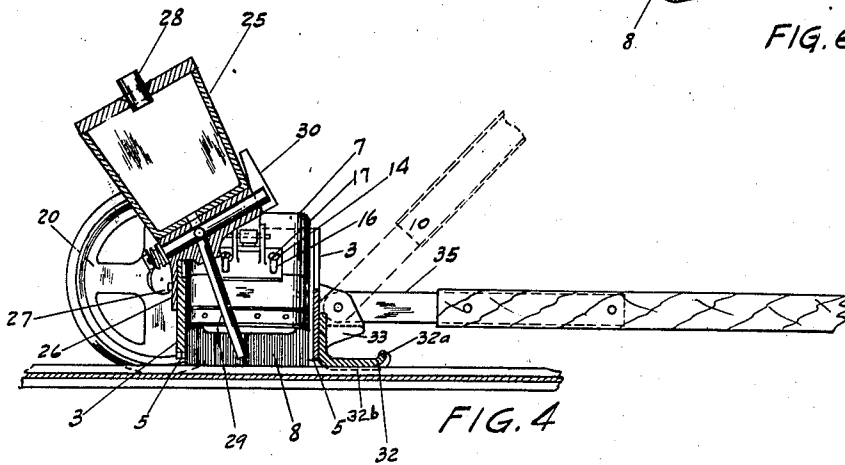


FIG. 4

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UNITED STATES PATENT OFFICE

2,331,516

PAINTING APPARATUS

Roy S. Thompson, Bay Village, Ohio

Application June 9, 1941, Serial No. 397,291

8 Claims. (Cl. 91—39)

This invention relates to improvements in painting apparatuses, and more particularly, to those used for applying paint to relatively long narrow strips of material, such as are commonly used in the construction of glass supporting members in greenhouses. The periodic painting of these window bars, or supporting members, is necessary to their maintenance and preservation, and the manual application of paint to these bars involves considerable time, and expense, in many cases the erection of special scaffolding, and the necessity for taking other precautionary measures to prevent damaging the structure of the greenhouse during the application of paint by manual means.

The quick and efficient application of paint is seen to be desirable therefor, and I have previously secured Patents No. 1,579,578 and No. 1,645,976, and have now pending application Serial No. 294,355, relating to inventions designed to accomplish the painting of the bars of the windows, as before mentioned, and which overcome the primary difficulties of manual application of paint, and furthermore, produce uniformly good results.

This particular invention represents improvements on the previous apparatuses, and still further reduces the cost of maintenance of greenhouses by accomplishing the painting operation in a more thorough and economical manner.

To obtain these reductions in costs, and to more thoroughly apply the paint, I provide a paint receptacle or carriage, having paint brushes operating therein, and adapted to be operated through an opening in the carriage by an arrangement of operating members actuated by movement of wheels, which contact the glass over which the carriage moves and support the carriage in its painting movement over the bars of the greenhouse sash. The paint is controllably supplied to the brushes mounted in the carriage by suitable means provided in a paint reservoir supported on the paint receptacle or carriage.

Accordingly, one of the objects of the present invention is to provide a novel form of driving means, whereby actuation of the brushes in the paint receptacle is carried out in the painting operation.

Another object of the invention is to provide novel means of drivably connecting the painting brushes to the carriage for their painting operation.

A further object of the invention is to provide a guiding means for the apparatus that is

simple and assists in improved handling of the same.

A still further object of the invention is to provide an apparatus that will effect a complete painting job of the bar or strip painted, and which will require no re-touching of the same by hand and prevent splattering of the paint during the painting operation.

Further and more particular objects of the invention will be set forth in the description of the invention, and in the figures, in which:

Figure 1 is a side elevational view of the apparatus illustrating the manner in which the apparatus is used.

Figure 2 is a sectional view about on the line 2—2 of Figure 1.

Figure 3 is a top plan view of the apparatus with the paint reservoir removed.

Figure 4 is a sectional view about on the line 4—4 of Figure 2.

Figure 5 is a detail view showing, in section, certain parts of the apparatus, and illustrating the actuating arms and manner of connecting the same to the brushes.

Figure 6 is a plan view of one of the paint applying devices.

Referring to the drawings, the numeral 1 indicates a trough-shaped carriage or paint receptacle, having inclined side walls 2, and substantially vertical end walls 3 providing a space for the reception of paint.

In Figure 2, it is seen that the walls 3 converge to the bottom of the receptacle 1, the lower edges 4 of the walls 2 and the lower edges 5 of the end walls 3, thereby forming a narrow rectangular opening 6, through which the paint applying brushes are actuated to contact the strip or bar to be painted.

Paint brushes are designated at 7, with bristles 8, which are slidably positioned in the receptacle 1, and provided with actuating linkages 9 to impart a reciprocating movement to the brushes in a manner to be described.

The actuating linkages 9 are comprised of wide angular-shaped members 10, adapted to be pivoted near the centers of their divergent arms, as at 11, on suitable supporting brackets 12a, which are fastened to the upper portion of the inclined side walls 2 by suitable screws 12. The brushes 7 are pivotally connected at 13 to the inner ends of the actuating members 10 by an adjustable pad 14, having ear portions 15 engaged by the pivot 13. Adjustment of the brushes 7 for wear, relative the pads 14 is provided by longitudinal openings 16 through which suitable

screws 17 connecting the pads 14 to the brushes 7, pass. The brushes 7 are provided at their upper ends, and transversely of their length, with slots 18 through which the inner ends of the actuating members 10 are adapted to move in a manner to be described.

The actuating members 10 carry at their outer ends, rollers 19, adapted to coact with cam surfaces 20 near the circumference of the supporting and driving wheels 21. Ends 42 of suitable tension springs 41 engage openings 40 near the pivots 11 of the actuating members 10 and are held at the other ends by screws 43 positioned in bosses 44 of the inclined side walls 2 of the paint carriage or receptacle. The springs 41 resiliently maintain the brushes 7 in a painting position and return them to the painting position, after actuation of the actuating members 9, by the cam surfaces 20 of the drive wheels 21. Rubber tires 22 are suitably mounted on the wheels 21 to provide traction therefor, and serve as cushioning means for the painting apparatus in its working movement.

The wheels 21 are rotatably mounted on stub axles 23, the axles 23 being rigidly connected at their inner ends to the carriage 1 by bolts 24, as shown in Figure 3. The wheels 21 are confined on the stub axles 23 by means of cotter pins 23a and washers 23b in a conventional manner.

A paint reservoir 25 is supported on the front wall 3 of the carriage 1, by a suitable bracket 26, fastened thereto, as by means of screws 27. A suitable opening and closure member 28 is provided in the top of the reservoir 25 to permit filling the same. The paint in the reservoir 25 is fed into the receptacle 1 through a feed pipe 29, an adjustable valve means 30 being provided to control the rate of flow of the paint into the paint receptacle 1.

The width of the strip or bar to be painted will be determined by the width of the rectangular opening 6 in the bottom of the paint receptacle 1, and this may be varied in accordance with the description of the receptacle in the previously mentioned application, Serial No. 294,355, wherein slots in the lower portions of the inclined side walls 2 permit the inward or outward bending of the portions of the walls between the slots. The arrangement of the bristles 8 of the brushes 7 is likewise described in the application above mentioned, wherein each set of bristles 8 comprises a central body portion extending from the side of the brushes 7 which in operative position lie adjacent the walls 2 of the carriage 1. The end portions of the bristles 7 are built up to provide a greater thickness of the bristles at these points. Since the bristles 8 of the brushes 7 are confined and directed through the opening 6, the paint will be properly directed by the brushes to the strip over which the apparatus is being moved.

The proper alignment of the rectangular opening 6, in the paint receptacle or carriage 1 in relation to the strip or bar of material being painted, is maintained by a guide member 31 suitably fastened to the rear wall 3 of the paint receptacle 1, said guiding member 31 having a guiding element 32 at its lower portion, as shown in Figures 1 and 4, adapted to straddle the strip to be painted. The guiding element 32 is provided with a curled end 32a and with a suitable groove portion 32b longitudinal thereof, adapted to contact the strip being painted, the curled end being provided to prevent the guiding member 32 from being caught in obstructions, or by cross

bars of the greenhouse sash in the painting thereof. The guide member 31 also has integral therewith suitable ears or lugs 33, extending therefrom, and adapted to receive a pivot 34. The pivot 34 in turn engages a bifurcated member 35, which is held in pivotal engagement with the pivot 34 by suitable means as cotter pins 36.

The bifurcated member 35 engages a handle member 37, fastened thereto, by bolts 38, and nuts 39, in a conventional manner, the handle 37 serving as a means for moving the carriage or paint receptacle 1, back and forth over the strip in the painting operation.

An abutment portion 40 integral with the guiding member 31 is adapted to coact with the ends of the bifurcated member 35, near the pivots 34, to limit the tilting movement of the carriage 1 under certain conditions of operation of the painting apparatus, and for example, when the painting apparatus approaches and must of necessity be somewhat propelled over the surface of a ridge pole or cap member of the greenhouse.

Having described the details of my invention, the manner in which the various parts described interact and perform the painting operation is best understood, from a description of the operation, as now follows:

The reservoir 25 is filled with paint, and the valve means 30 is adjusted to control the flow of paint to the carriage 1 for application to the strip by the brushes 7. The guide member 31 is suitably placed in contact with the strip or bar to be painted, and with the carriage 1 in position over the strip to be painted, a continuous movement in one direction, or a back and forth movement, may be imparted to the carriage through the handle 37 for applying the paint.

The portions of the brushes 7 which extend through the rectangular opening 6 will contact the strip to be painted, and the movement of the carriage will cause rotation of the wheels 21 which are resting on the glass of the sash, and the cam portions 20 near the periphery of the wheels will actuate the actuating members 9, causing a lifting of the brushes out of engagement with the bar or strip being painted, and thereafter, the springs 41, connected to the actuating members 9, will cause the brushes to again come in contact with the bars being painted.

The cam surfaces 20 are so arranged near the periphery of the wheels 21 that rotation of the wheels 21 and thus the cam surfaces thereon, alternately raises the brushes against the tension of the springs 41, causing the actuating levers 9 to follow the cam surfaces 20. The spacing of the cam surfaces 20 on the wheels 21 is such that the actuating levers are not actuated for certain periods during the operation of the apparatus and thus the bristles 8 of the brushes 7 will remain in contact with the work to be painted in an alternate fashion. A wiping and tucking action of the brushes is thus seen to be effected.

The above operation will be seen to take place in accordance with the spacing of the cam surfaces 20 near the periphery of the wheels 21, and is seen to be an alternate action whereby a tucking operation is afforded to the brushes and thus a more thorough application of paint is accomplished.

Because of the fact that the brushes are lifted alternately and in their lifting action, some of the tension on the bristles 8 of the brushes 7 is removed, the passage of the bristles 8 over cross bars, or against the ridge pole of the greenhouse, will not cause a splattering of the paint applied

to the bars or strips of the sash, and this action is likewise seen to effect complete painting of the bars by enabling the bristles 8 of the brushes 7 to contact corners or uneven surfaces of the bars.

The arrangement of the brushes 7 in the carriage 1 is such that one of the brushes contacts one side of the bar being painted, and the other brush, the other side, and the spreading out of the bristles on the top of the bar by each of the brushes will be seen to effect a thorough coverage of the bars being painted.

The reciprocating action of the brushes is furthermore seen to eliminate a great deal of the wear which accompanies the contact of stationary brushes with the bars being painted, and simulates more nearly the usual method of manual application of paint to the bars, which is generally conceded to be the most desirable method of applying paint for thorough coverage, and thus, it is seen that the purposes of my invention are accomplished by the arrangement of the brushes and the driving connection of the wheels therewith.

Referring again to the reciprocating action of the brushes 7 of the invention, it should be pointed out that they are so interconnected by the linkages described to coact with the cams 20 on the wheels 21 as to provide that they may only be lifted and held out of contact with the bar or strip being painted for approximately two-thirds of their width, and thus the possibility that any portion of the bar will not receive its proper amount of paint will be eliminated.

The general construction of greenhouses where the painter of the invention will most generally be used is such that the individual panes of glass in the sash are lapped slightly over the edges of the panes just preceding to provide for the shedding of rain or snow, and thus the lifting action of the brushes 7 is seen to greatly decrease the possibility of the bristles 8 being cut by the sharp edges of the glass, thus exposed, when the apparatus is being operated over the bar, and at the same time prevent any spattering of the paint that would occur if the bristles maintained continuous contact with the bar and thus came in contact with the edges of the glass, as previously described.

Further, the provision of the large supporting wheels 21 for support of the apparatus and actuation of the brushes 7 makes possible the movement of these wheels up the side of the ridge pole of the greenhouse, such ridge poles normally and generally being composed of wooden members, usually a two-by-six board, and enable the brushes to adequately paint the bars completely to their junction with the ridge pole.

When the apparatus is thus operated, the guide element 32 will still maintain the alignment of the brushes on the bar being painted, and the curled end 32a of the element 32 will serve as a rocking support for the apparatus. The contact of the bifurcated handle 35 with the lugs 40 on the guide member 31 prevents the apparatus from being completely overturned when the wheels are thus moved up on to the side of the ridge pole, in the previously described manner.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

1. In painting apparatus of the class described, in combination, a paint reservoir, a carriage sup-

porting said reservoir for traveling movement, paint applying devices on the carriage arranged to receive paint from the reservoir, said paint applying devices including brush means mounted 5 for movement towards and away from the surface to be painted, supporting wheels for the carriage to facilitate the travel movement of the same with the reservoir, actuating means connected with the paint applying devices for lifting and dropping said paint applying devices so that the latter may have a wiping and tucking action in effecting the application of the paint to the work being painted, and means actuated by moving parts of the machine as it travels for 15 operating the actuating means aforesaid for performing the lifting and dropping movements of the said paint applying devices.

2. Apparatus as claimed in claim 1, wherein the actuating means comprise levers connected 20 with the paint applying devices, and the last-named means comprise cam members on the wheels for actuating said levers.

3. Apparatus as claimed in claim 1, wherein the actuating means comprise levers connected 25 with the paint applying devices, the last-named means comprise cam members on the wheels for actuating said levers, and resilient means coacting with the paint applying devices for holding same in contact with the work.

4. In painting apparatus of the class described, in combination, a paint reservoir, a carriage supporting the same, a paint applying means movably mounted on the carriage for upward and downward movement, means for moving the carriage to effect its travel over the work, wheel 35 means on the carriage for contacting the surface over which the carriage travels, and actuating means for actuating the paint applying means in said upward and downward direction responsive to travel of the carriage.

5. Apparatus as claimed in claim 4, in which the actuating instrumentalities comprise a rocker lever on the carriage connected with the paint applying devices, and spaced cams on the wheel 40 means adapted to trip the rocker lever intermittently.

6. Apparatus as claimed in claim 4, in which the actuating instrumentalities comprise a rocker lever on the carriage connected with the paint 45 applying devices, spaced cams on the wheel means adapted to trip the rocker lever intermittently, and adjustable connections between the rocker lever and the paint applying devices for adjusting the latter.

7. In painting apparatus of the class described, in combination, a reservoir for paint, a carriage supporting the reservoir, paint applying devices on the carriage, means to feed paint from the reservoir to the paint applying devices, wheels 50 supporting the carriage for travel movement, a guide member at the rear portion of the carriage to engage a bar or the like for guiding the movement of the carriage in its travel, bracket means on the guiding means, and a handle connected with said bracket means for manipulation of the apparatus.

8. Painting apparatus as claimed in claim 7, in which the rear end of the guide member is formed to provide a rocker support for the ap- 55 paratus when the wheels climb an obstacle during forward movement.

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