A light weight mobile painting machine suitable for painting or providing other treatment to vertical surfaces, such as walls. The machine includes extendible tubes which support the machine adjacent the wall. A roller unit having a plurality of paint applying rollers and a paint reservoir is mounted on the tubes for vertical movement therealong. A spring and pulley system coupled to the roller unit is used to counterbalance the weight of rollers.
WALL PAINTING MACHINE

BACKGROUND AND SUMMARY OF PRESENT INVENTION

This invention relates to a painting machine adapted to mechanically position paint rollers for painting vertical surfaces. To use 3 X 27-inch rollers or 81-inch roller as a unit with the same effort as a 9-inch roller certainly is an advantage. But the roller arrangement used in this invention is even more advantageous than just to cover nine times larger surface by one move. Observing that a conventional 9-inch roller is adjusted to the physical strength of an average painter to be handled at speed below splattering by centrifugal force using the paints on the market the consistency of which is adapted for that purpose means that splattering by centrifugal force is not a factor. The splattering that remains is caused by unevenly wetted rollers touching the wall. Thus the critical area that gets splattered is the baseboard which can not be covered by a dropcloth. Further observation shows that; on the average it takes three moves to cover the surface with paint.

Realization of the foregoing makes it advantageous to arrange rollers as multi roller unit; for example three rollers above each other to achieve coverage of a surface by one move instead of three and to reduce splattering of a base board. The two upper rollers can not splatter the base board; thus the splattering is reduced to one third of the splattering caused by three individual rollers used separately. Obviously the nine times bigger roller is proportionally heavier but using a spring and pulleys for counterbalancing there remains just the frictional force which could be roughly compared to a task moving a 9-inch roller.

The success of a painting machine has to be measured by its critical factors which can render it useless. Thus efficiency, cleanliness, has to be compared to a time necessary to wash the machine parts so the machine can be used for applying different color paints, the weight and mobility of the machine, adaptability to any surface using different amounts of paint, and the use of the machine for walls of different ceiling heights.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 shows a side view of fully assembled painting machine.

FIG. 2 shows an exploded view of the roller assembly of the painting machine.

FIG. 3 shows the cross-section of the painting machine.

FIG. 4 shows a plural container assembly for use with the painting machine.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The painting machine consists of two main parts: the roller assembly unit with handle and paint feeding container shown hanging on a cable wire in FIG. 1 and its separate parts. The other main parts of this machine are the spring and the pulleys assembled in two tubes sliding in each other — tube 1 and tube 2 where one end of tube 1 is fastened to the top plate and one end of tube 2 is fastened to a rolling base. The free in each other sliding ends of tube 1 and tube 2 are stopped or extended for desired ceiling height of a wall by inserting a bolt through corresponding holes on the back side of the tubes. The roller assembly comprises three bracket-like roller holders holding and pivoting the roller in journal type bearings. The brackets are formed by six rectangular bent bars 7 which are welded or attached by screws at one end of each of two overlapping plates: plate 8 having projected edges and plate 9 which slides between projected edges. These overlapping plates are stopped in the right position when their individual holes cover each other and a bolt 10 can be inserted in that hole. The two female hooks 11 of the roller assembly are hooked into supporting plate male hooks 15. (not shown)

FIG. 2 shows the roller unit support plate 14 with attached handle 12. The support plate 14 is directly connected to cable wire 13. The support plate 14 has on its upper front edge two male hooks 15 to hook in the roller assembly and also has two male hooks 15 on upper back edge to hook in the paint container.

FIG. 2 also shows a U shape paint container 16 with two female hooks 11 on its upper edge to be hooked in supporting plate 14. On the bottom wall facing the roller assembly is a gate to allow paint to flow over prolonged bottom forming a tray likeadle lip 17. When the paint container is hooked in position in the male hooks 15 of the supporting plate 14, the ladle lip 17 passes through the cut out of the supporting plate 14 and the cut outs of the overlapping plates 8 and 9 taking the position over the center of the middle roller supplying the paint to the upper and the middle roller. The gate can be closed or widened by a paint flow regulating shield 18.

FIG. 2 shows the regulating shield 18 with two connected springs 19 holding the gate in open position sliding along the front wall closing or opening the gate. A pinch spring 20 permanently attached at the middle of the regulator shield stops the shield in desired position by clamping the shield to the wall of the container 16. The regulating shield is shown separately in exploded fashion in FIG. 2 and is also shown in the operative position in phantom.

FIG. 3 shows the cross-section of the painting machine. The tube 2 having an L shaped collar 21 at its one end is fastened by screws to the wooden platform 4. The bottom end of the spring 22 is also fastened by a bolt 6 to the wooden platform 4. The tube 1 having an L shaped collar 23 is fastened to the top plate 3. On the upper end of the spring 22 a pulley bracket 24 is fastened, holding the pulley 25. Pulleys 26 and 27 are fastened through the top plate 2. A cable wire 13 is fastened to pulley bracket 24 going up and around pulley 26, coming down and around pulley 25, going up and around pulley 27 and is fastened to the supporting plate 14 holding the roller unit.

Since the counterbalancing device reduces the downward pull of the rollers to a fraction, the roller unit also can be operated by a mechanical force like an electrical motor 30 with limit switch control (see FIG. 3) — the size of the roller unit, the roller diameters, as well as the roller length, even the number of rollers can be chosen accordingly.

To supply paint to the rollers instead of using one container, more containers 16a, 16b, etc. can be used (see FIG. 4), for example, to apply multicolor paints, or
for the purpose to apply two compound plastic liquids. A tray with attached sponge can be connected to the bottom of the roller unit for gathering running liquids when machine is used for wall washing or other wall treatments where liquids are used in abandon. The described painting machine can also be used in a position hanging by its top plate.

What I claim as new and desire to protect by Letters Patent of the United States is:

1. A mobile wall treatment machine suitable for applying liquid to vertical surfaces, said machine comprising:
   a roller assembly;
   an extensible columnar support means for supporting and positioning said roller assembly adjacent a vertical surface; and
   a counterbalance means interconnecting said support means and said roller assembly for positioning the roller assembly in abutment with the vertical surface and for facilitating movement of said roller assembly up and down along said vertical surface, said roller assembly further comprising at least three vertically stacked rollers abutable with said vertical surface, a liquid reservoir having a gravity feed outlet for simultaneously providing liquid to the upper two of said rollers, and means for vertically moving said roller assembly along said vertical surface, said upper two rollers applying liquid to said vertical surface, said lower roller preventing splattering during the liquid application.

2. The mobile wall treatment machine of claim 1 wherein said gravity feed outlet is formed for extension between the upper two of said vertically stacked rollers for simultaneously providing liquid to said pair of rollers.

3. The mobile wall treatment machine of claim 2, wherein said liquid reservoir includes a means of regulating the flow of liquid in said gravity feed outlet.

4. The mobile wall treatment machine of claim 1 wherein said roller assembly is positioned between said columnar support means and said vertical surface, said liquid reservoir being mounted on the rear of said roller unit and embracing said support means.

5. The mobile wall treatment machine of claim 1 wherein said columnar support means has a base at the lower end thereof for moving the wall treatment machine back and forth along said vertical surface.

6. The mobile wall treatment machine of claim 1 wherein said columnar support means is extensible for adapting the machine to vertical surfaces of varying heights.

7. The mobile wall treatment machine of claim 1 wherein said counterbalance means comprises a serially connected spring and cable assembly having one end connected to said columnar support means and the other connected to said roller assembly.

8. The mobile wall treatment machine of claim 7 including powered means for vertically moving said roller assembly along said vertical surface.

9. The mobile wall treatment machine of claim 1 wherein said machine includes a plurality of liquid reservoirs having gravity feed outlets for simultaneously providing liquids to the upper two of said rollers.

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