Sept. 16, 1930. T. M. BLATT 1,776,100

PAINTING MACHINE

Filed Sept. 7, 1928 2 Sheets-Sheet 1

Fig. 1

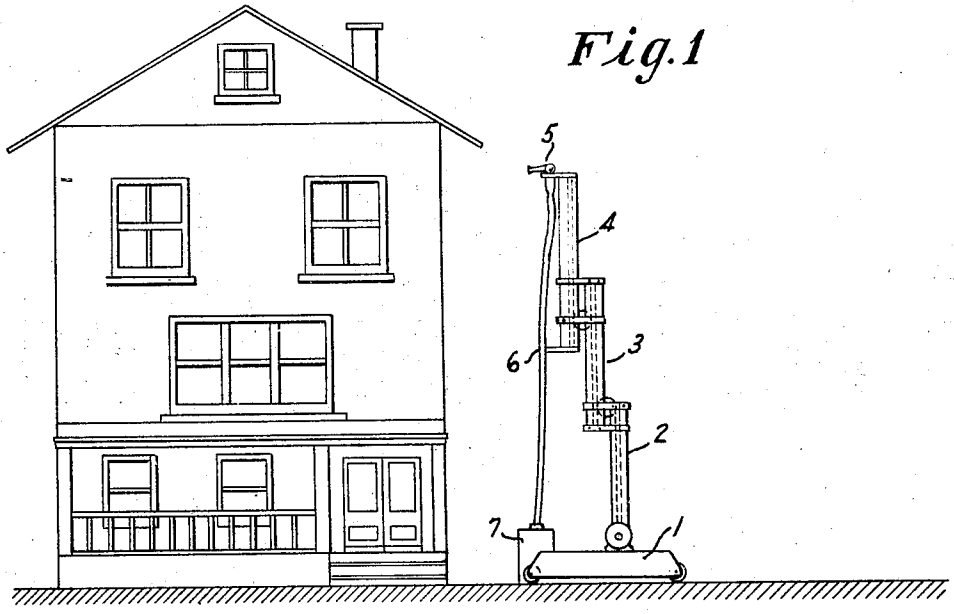
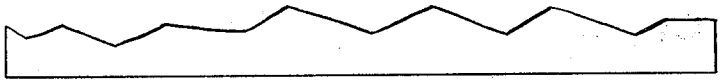


Fig. 2



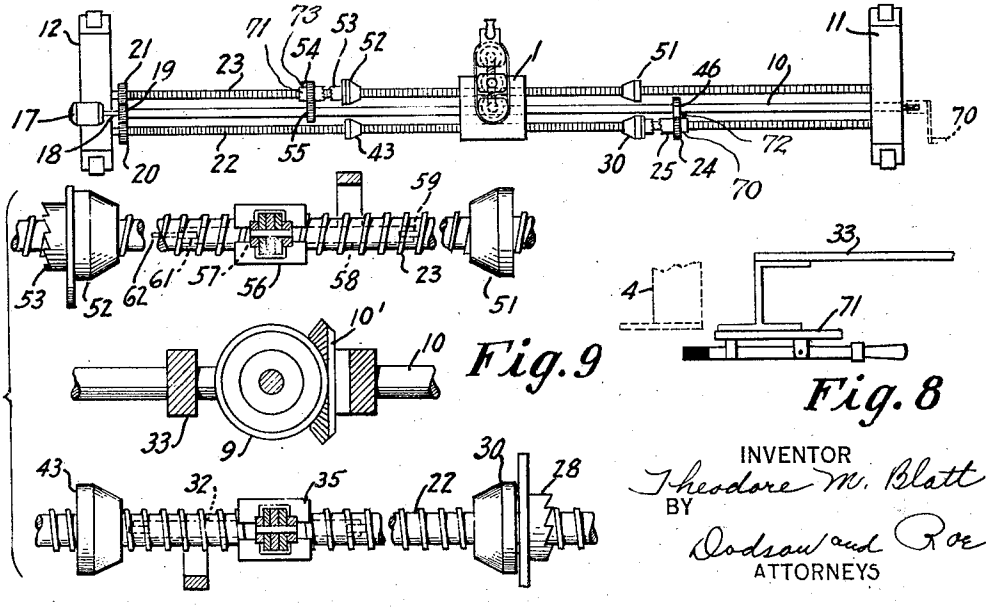


Fig. 9

Fig. 8

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Fig. 3

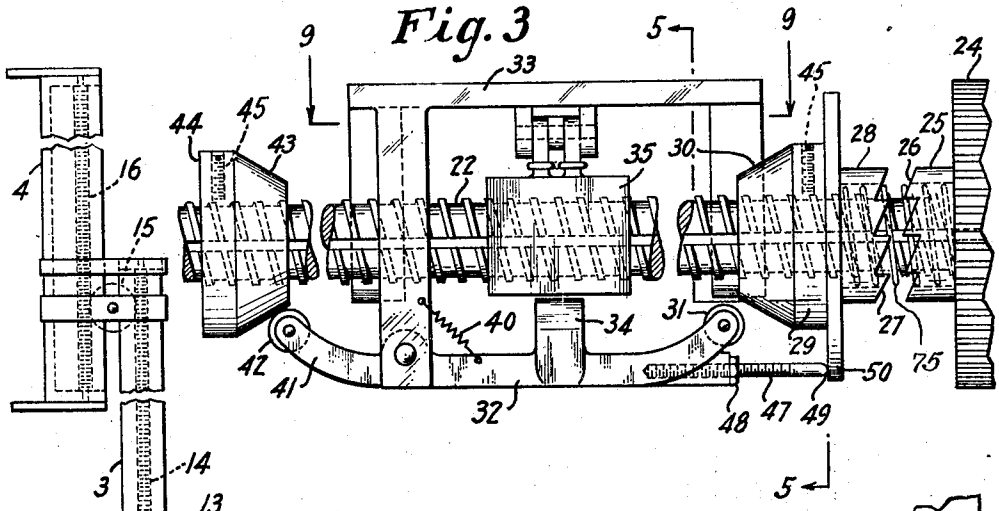


Fig. 4

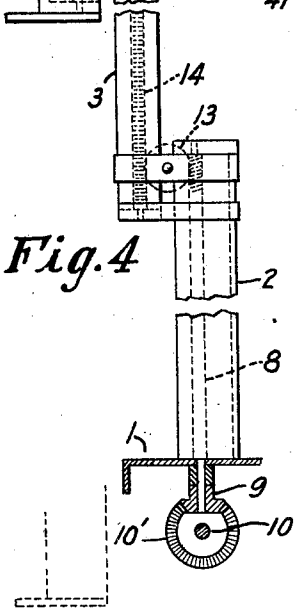


Fig. 5

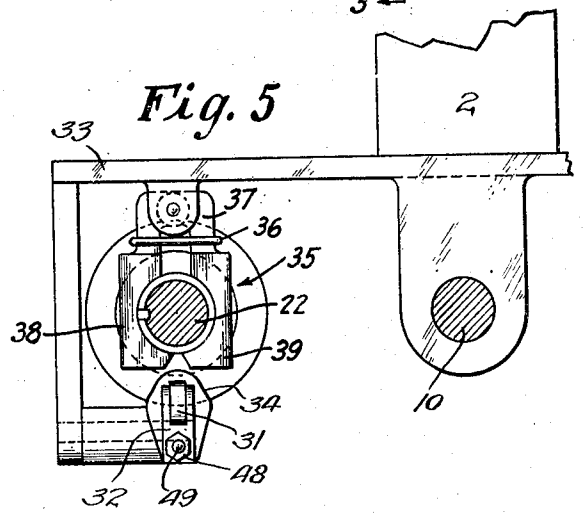


Fig. 6

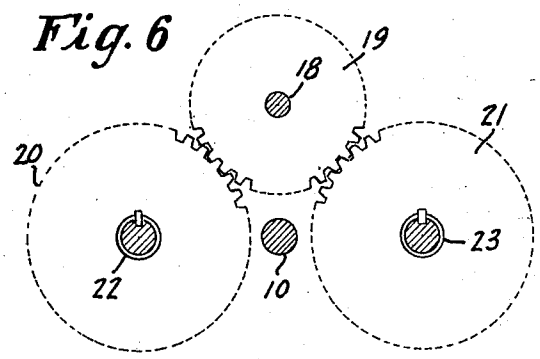
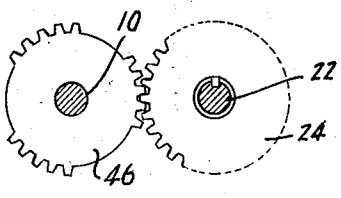


Fig. 7



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Patented Sept. 16, 1930 1,776,100

UNITED STATES PATENT OFFICE

THEODORE M. BLATT, OF OAK PARK, ILLINOIS

PAINTING MACHINE

Application filed September 7, 1928. Serial No. 304,439.

My invention relates to that class of machines which are designed to take the place of hand labor where the mechanism is automatically moved over the surface to be painted.

My invention has for its object to provide a collapsible tower upon which may be mounted the spray gun which may be connected to a supply of paint by a suitable flexible conduit.

My invention has for its further object to provide a device which will automatically be moved backward and forward over the surface to be coated; also to provide a device which can be moved toward or away from the said surface.

My invention has for its further object to provide mechanism which can be set for any desired width without interfering with the automatic device which reverses the travel of the spray.

Other objects will appear from the hereinafter contained description.

My means of accomplishing the foregoing objects may be more readily understood by having reference to the accompanying drawings, which are hereunto attached and made a part of this specification, in which—

Fig. 1 is a view of a house, my improved device being shown at one side of and adjacent to said house;

Fig. 2 is a top or plan view of the device, only a fragmentary portion of the house being shown;

Fig. 3 is an enlarged detail view of the stop mechanism;

Fig. 4 is a detail view of the collapsible tower;

Fig. 5 is a section taken on the line 5—5 in Fig. 3;

Fig. 6 is an end view of the gear train;

Fig. 7 is an end view of the automatic control gears for the movement of the tower;

Fig. 8 is a diagrammatic view of automatic switch for stopping the motor; and

Fig. 9 is a fragmentary sectional view taken on the line 9—9 in Fig. 3 but on a smaller scale.

Similar reference numerals refer to similar parts throughout the entire description.

As shown in the drawing my device comprises a collapsible tower 1 which, as illustrated, is formed in sections 2, 3 and 4. The section 4 carries the spray nozzle 5 which is adjustably mounted on the section 4 so that it can be directed upwardly so as to spray a ceiling as well as the side walls of a house or room. Obviously the device can be made of such size as to be utilized to spray rooms inside of the house as well as the exterior thereof. The nozzle 5 is connected by a hose 6 or other flexible conductor to a barrel 7 or other suitable source of supply of paint. The paint will be elevated to the nozzle by pumping into the barrel above the level of the paint.

As more clearly seen in Fig. 4 the sections 3 and 4 each contain mechanism for elevating and lowering them. This mechanism comprises a shaft 8 which is rotated by a bevel gear 9 which is in mesh with a bevel gear 10^1 mounted upon a shaft 10, the ends of which are mounted in journals formed in the end bases 11 and 12. The shaft 8 has a worm thread cut on it which in is mesh with the worm wheel 13 which is in mesh with a worm thread cut on a shaft 14 mounted in section 3. The worm on the upper end of shaft 14 is in mesh with a worm wheel 15 which meshes with the worm thread cut on a shaft 16 mounted in section 4. An electric motor 17 is mounted upon the base 12 and has on its shaft 18, a pinion which in turn drives gears 20 and 21 which are fixedly attached to threaded shafts 22 and 23. These shafts are threaded right and left hand respectively. Upon the shaft 22 is rotatably mounted a gear 24 which has a hub 25, the face of which is provided with teeth 26 adapted to engage similar teeth 27 cut on the hub of the clutch member 28. The clutch member 28 is splined upon shaft 22 its opposite face bears against the stop collar 29. A spring 75 is provided to hold the teeth normally out of engagement. This collar 29 has a tapered portion 30 adapted to engage a roller 31 mounted on an arm 32 which is pivotally attached to the base 33 of the tower. The arm 32 carries a wedge 34 which disengages a split nut 35 carried by the base 33 and adapted when

closed to engage the threads upon shaft 22. The two halves 38 and 39 of the nut are held closed by a spring 36 which surrounds the upwardly extending necks 37. The arm 32 has a coil spring 40 which holds the split nut 35 open after it has been opened by the wedge 3 and when the arm has been moved past the center and the wedge 34 has spread the two sides 38 and 39 apart so that the nut no longer engages the threads on the shaft 22.

The other end 41 of the arm 32 also has a roller 42 which is adapted to engage the tapered portion 43 of a stop collar 44 carried by the shaft 22. An extension 47 is mounted in the arm 32 being threaded therein and held in adjusted position by a nut 48. The end 49 of the extension 47 contacts the flange 50 of the clutch member 28. All of the stop collars are held in any desired location by means of set screws 45. The teeth of the gear 24 are adapted to engage teeth upon an intermittent or mutilated gear 46 fixedly mounted on shaft 10, whereby an intermittent movement may be imparted to the said shaft 10. A stop collar 51 is fixedly secured to shaft 23 on the other side of the base 33. The structure thus described is exactly the same for the shaft 22, it carrying a stop collar 52 similar to stop collar 30 and a clutch 53, like the one 28, is mounted to engage a gear 54, the teeth of which are adapted to engage an intermittent or mutilated gear 55 attached to shaft 10. These gears 46 and 55 are so timed that one set is always kept in position to lower the tower, one set of gears are as shown in Fig. 7, while the opposite set are in the relief portion of the other intermittent gear. Stop collars 70 and 71 are mounted on shafts 22 and 23 and abut gears 24 and 34 respectively, set screws 72 and 73 being provided to prevent the longitudinal movement of the collars.

A split nut 56 similar to the nut 35 is mounted upon the shaft 23 and is opened by a wedge 57 on an arm 58 operated by a roller 59 contacting with the tapered surface of a stop collar or by a roller 61 on the other end of the arm 58 engaging the stop collar 52. An extension 62 engages the clutch member 53 moving it into engagement with the teeth on the hub of the gear 54. An electric switch 71 which is in the line leading to the electric motor 17, is mounted on the base 33 and operates to break the circuit when the tower is fully collapsed.

The operation of the device is as follows:

The rotation of the motor in a counter clockwise direction will turn the shaft 23 in a clockwise direction and as the shaft cannot move longitudinally the base 33 and the collapsible tower 1 will be moved longitudinally of said shaft until roller 59 contacts with the tapered position of the stop collar 51 this forces the wedge 57 in between the two halves of the split nut 56 disengaging the shaft 23. As this occurs the extension 47 pushes the flange 50 of the clutch member 28 moving the teeth 27 into engagement with the teeth 26 on the hub of the gear 24 thus rotating it on the shaft and thus moving the intermittent or mutilated gear 46 as far as the number of teeth thereon will carry it. This movement carries the shaft 10 an equal distance and moves the bevel gears 9 and 10^1. Thus through the worm drive in the sections of the tower 1 the top section, and in turn the spray nozzle 5, will be dropped the predetermined number of inches for the next movement of the tower in the reverse direction. As the nut 56 is disengaged from the shaft 23 the nut 35 is automatically brought into engagement with the shaft 22 and as it is rotating will return base 33 and tower to its starting point when the stop collars there will automatically disengage the nut 35 and re-engage the nut 56 and the movement is repeated over and over until the tower has been collapsed. It will be apparent to persons skilled in the art that the stop collars may be adjusted to any width room and that by proportioning the number of teeth on the mutilated gears that the sections can be moved downwardly 4, 6, or 8 inches as desired.

By locating these gears as I do, it will be seen that they are always in position so that when the loose gears are rotated they will be in position to be engaged and so there will be no lost motion. The whole device can be quickly and easily assembled and disassembled and when assembling, the operator will mount the tower in its extended position. Should it be desirable to raise the tower after it has reached its lowest position, this may be done by means of a crank 70 shown in dotted lines which engages a squared end of the shaft 10 and since the gears 24 and 54 are mounted to rotate freely on their respective shafts it is obvious they will offer no resistance to this operation. When the tower reaches its lowest position the bottom of the section 2 will contact with one end of the switch 71 and break the contact so that the motor will automatically be stopped and no injury can come to the working parts of the mechanism.

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

1. In a device of the character described a collapsible tower formed in sections, automatic means to successively lower said sections a predetermined distance, automatically operated power means to move said tower back and forth in relation to the surface to be coated, means to move said tower towards and away from said surface, a nozzle adjustably secured to the top section, a suitable paint supply and flexible means to connect said supply to said nozzle.

2. In a device of the character described a collapsible tower formed in sections, automatic means to successively lower said sections a predetermined distance, automatically operated power means to move said tower back and forth in relation to the surface to be coated, a nozzle adjustably secured to the top section, a suitable paint supply and flexible means to connect said supply to said nozzle.

3. In a device of the character described, a suitable paint supply, a collapsible tower formed in sections, a nozzle mounted on said tower, flexible means to connect said nozzle to said supply, parallel rods threaded right and left, power means to rotate said rods, a base on which said tower is mounted, adjustable stop collars on said rods, split nuts on said base which engage said rods, arms pivotally attached to said base, rollers in the ends of said arms which on contact with said stops at one end of the travel of said base disengage one of said nuts and at the other end disengage the other nut whereby said base is moved alternately back and forth through a predetermined distance.

4. In a device of the character described, a suitable paint supply, a collapsible tower formed in sections, a nozzle mounted on said tower, flexible means to connect said nozzle to said supply, parallel rods threaded right and left, power means to rotate said rods, a base on which said tower is mounted, adjustable stop collars on said rods, split nuts on said base which engage said rods, means to normally hold said nuts in engagement with said rods, arms pivotally attached to said base, rollers in the ends of said arms which on contact with said stops at one end of the travel of said base disengage one of said nuts and at the other end disengage the other nut whereby said base is moved alternately back and forth through a predetermined distance.

5. In a device of the character described, a suitable paint supply, a collapsible tower formed in sections, a nozzle mounted on said tower, flexible means to connect said nozzle to said supply, parallel rods threaded right and left, power means to rotate said rods, a base on which said tower is mounted, adjustable stop collars on said rods, split nuts on said base which engage said rods, arms pivotally attached to said base, rollers in the ends of said arms which on contact with said stops at one end of the travel of said base disengage one of said nuts and at the other end disengage the other nut whereby said base is moved alternately back and forth through a predetermined distance, a worm drive in said tower, a bevel gear secured to the worm shaft in the lower section of said tower, intermittent gears on said shaft, gears on the threaded shafts, means actuated by said base at the completion of its travel to cause said gears to move the intermittent gears a predetermined distance.

6. In a device of the character described a collapsible tower formed in sections, automatic means to successively lower said sections a predetermined distance, automatically operated power means to move said tower back and forth in relation to the surface to be coated, a nozzle adjustably secured to the top section, a suitable paint supply and flexible means to connect said supply to said nozzle, means actuated by one of said tower sections to stop said power when the tower is fully collapsed.

7. In a device of the character described, a suitable paint supply, a collapsible tower formed in sections, a nozzle mounted on said tower, flexible means to connect said nozzle to said supply, an electric motor, a pinion on its shaft, parallel rods threaded right and left, gears on said shafts in mesh with said pinion to rotate said rods, a base on which said tower is mounted, adjustable stop collars on said rods, split nuts on said base which engage said rods, arms pivotally attached to said base, rollers in the ends of said arms which on contact with said stops at one end of the travel of said base disengage one of said nuts and at the other end disengage the other nut whereby said base is moved alternately back and forth through a predetermined distance.

8. In a device of the character described, a suitable paint supply, a collapsible tower formed in sections, a nozzle mounted on said tower, flexible means to connect said nozzle to said supply, an electric motor, a pinion on its shaft, parallel rods threaded right and left, gears on said shafts in mesh with said pinion to rotate said rods, a base on which said tower is mounted, adjustable stop collars on said rods, split nuts on said base which engage said rods, arms pivotally attached to said base, rollers in the ends of said arms which on contact with said stops at one end of the travel of said base disengage one of said nuts at the other end disengage the other nut whereby said base is moved alternately back and forth through a predetermined distance, a switch actuated by one of said tower sections to break the electric circuit and stop said motor when the tower is fully collapsed.

THEODORE M. BLATT.