

Dec. 26, 1950

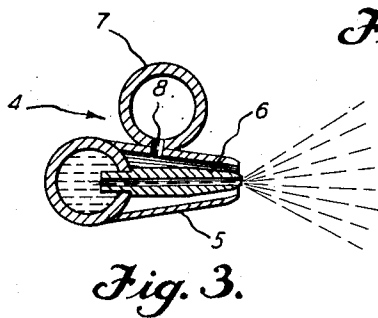
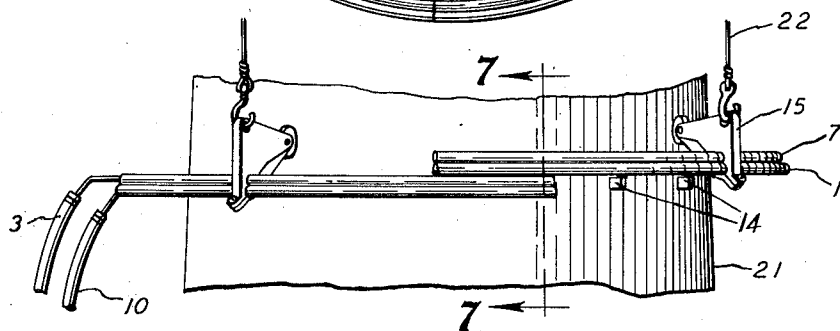
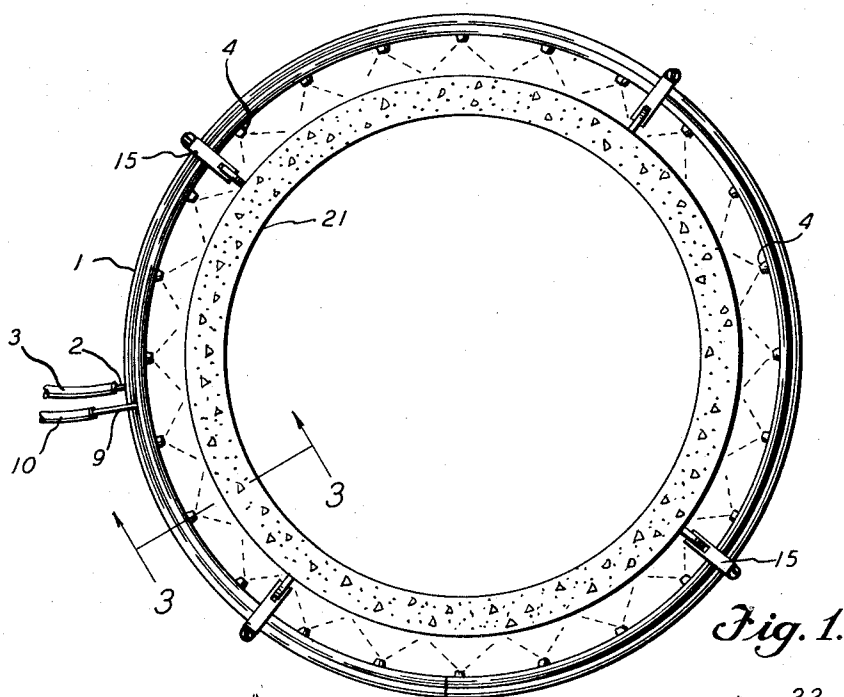
F. C. PHILLIPS

2,535,451

PAINTING DEVICE FOR ROUND SURFACES

Filed Nov. 5, 1947

2 Sheets-Sheet 1



F. C. PHILLIPS
INVENTOR

BY *Herbert J. Brown*
ATTORNEY

UNITED STATES PATENT OFFICE

2,535,451

PAINTING DEVICE FOR ROUND SURFACES

Festus C. Phillips, Granbury, Tex.

Application November 5, 1947, Serial No. 784,234

3 Claims. (Cl. 91-45)

1

This invention relates to paint spraying apparatus and has reference to a device for spraying convex surfaces.

An object of the invention is to provide a paint spraying device for painting large convex surfaces such as smokestacks, grain elevators, and the like.

Another object of the invention is to reduce the hazard of having a painter suspended for long periods of time on scaffolds and the like when smokestacks and the like are being painted.

A further object of the invention is to provide a device of the described class which will save time when used for painting or spraying the objects referred to.

Another object of the invention is to provide a paint spraying device for the described purpose in which the individual nozzles are uniformly spaced with respect to the surface being painted, even though the latter is tapered, such as the surface of a smokestack.

A further object of the invention is to provide, in a paint spraying device of the described class, spring tension and roller means whereby the device may be operated in spaced relation with reference to the surface being painted.

These and other objects of the invention will become apparent from the following description of the accompanying drawings of exemplary forms of the invention, wherein:

Figure 1 is a plan view of a circular paint spraying device engaged upon the outer surface of a cylindrical surface, such as a smokestack, and showing, by means of dotted lines, the spraying action of the device.

Figure 2 is a side elevational view of the device illustrated in Figure 1, and particularly showing the overlapping arrangement of the ends of the circular members whereby the device may be adapted to inclined or tapered surfaces, such as the illustrated fragmentary portion of a smokestack.

Figure 3 is a vertical sectional view of the paint spraying device taken on lines 3-3 of Figure 1.

Figure 4 is a schematic view illustrating the present device adapted to the painting of a tall structure, such as a smokestack.

Figure 5 is a side elevational view of one of the rollers forming a part of the invention.

Figure 6 is a broken sectional view of a portion of the circular paint supplying tube and showing a valve arrangement for closing certain of the nozzles when the device contracts and assumes a smaller diameter. Figure 6 is taken on lines 6-6 of Figure 7.

2

Figure 7 is a vertical sectional view taken on lines 7-7 of Figure 2, and

Figure 8 is a modified form of the invention adapted to painting convex surfaces of grain elevators in which the surfaces to be painted are not completely annular.

The form of the invention shown in Figure 1 includes a circular paint supply tube 1 having overlapping ends, as illustrated in Figure 2, which are closed, and which tube is provided with a tubular inlet 2 connected with a flexible supply hose 3. The tube is of a spring material to cause the circle formed to contract under tension when the device is applied to an object having a diameter greater than the diameter defined by the innermost points of the device when the latter is in its contracted position.

The inner periphery of the flexible tube 1 is provided with a series of spaced spray units 4, the details of which are shown in Figure 3, and each unit consisting of a tubular air jacket 5, secured to the surface of the said tube and provided with a tubular nozzle 6 therein communicating with the said tube. Another flexible tube 7, similar to the first described flexible tube 1, is secured to the air jackets 5 and is provided with ports 8 for communicating air to the said jackets. Air is supplied to the circular air tube 7 by means of a connection 9 and an air supply hose 10. The operation of the spray units 4 consists of supplying paint to the tube 1 and air pressure to the circular air tube 7. As the paint is forced out of the nozzle 6, the surrounding air jet atomizes the paint, causing a spray for covering the surface to be painted.

As shown in Figures 2, 6, and 7, the ends of the circular tubes 1 and 7 are positioned one above the other and the nozzles 6 of the last two sprayer units 4 are provided with valves 11. The valves 11 consist of vertical bearings 12 in the lower surface of the tube 1 and are provided with stems 13 therethrough having cams 13a at their upper ends for engaging and closing the inner ends of the nozzles 6. The last described operation is carried out by means of laterally projecting triggers 14 which are integral with and located outwardly of the stems 13 and are adapted to be engaged by the end of the lower circular air tube 7 when the device contracts, as will be referred to in the description of operation. Upon contraction the abutting end of the lower air tube 7 first actuates the trigger 14 nearest the same, and upon further movement actuates the second trigger, thus closing the valve units 11 successively.

The assembled paint and air tubes 1 and 7

are provided with roller carriers 15, as shown in Figure 5, for supporting and spacing the device relative to the surface to be painted. Each roller carrier 15 is comprised of a triangular hanger plate 16, a roller 17 rotatably supported at one corner of the plate, and a clamp member 18 pivoted to the plate at the said roller. Each hanger plate 16 and clamp 18 is recessed to accommodate the diameters of the paint and air tubes 1 and 7. The clamp 18 is detachably secured to the plate 16 by means of a screw and nut arrangement 19 at the corner of the described triangle opposite the roller 17.

Any suitable hoist means may be employed for raising and lowering the device, such as illustrated in Figure 4. In the latter, supported pulleys 20 are temporarily installed at the top of a smokestack 21, and ropes 22 are used in connection with the pulleys for attaching hooks 23, at the ends of the ropes in holes 24 in the upper corners of the plates 16. By reason of the spring tension of the circular tubes 1 and 7, the rollers 17 are caused to engage the surface of the smokestack 21. The described form of the invention may be applied first to the base of the smokestack 21 to be painted, and moved upwardly in order that the spray valves 11 may operate separately in the manner described. In other forms of the invention, the device may be operated from top to bottom of the structure to be painted.

The form of the invention shown in Figure 8 is similar to the one previously described but consists of arcuate tubes 25 and 26 which correspond with the described paint and air tubes 1 and 7, respectively, but which tubes do not define a complete circle. The tubes 25 and 26 are flexible and may be shaped to the contour of the surface to be painted, but are not necessarily of spring material. This form of the invention is for painting convex surfaces, such as grain elevators 27, illustrated in part in Figure 8. The last described form of the invention includes the roller carriers 15 secured to for holding the tubes 25 and 26 in the manner previously referred to; and the respective tubes are provided with paint and air supply hoses 3 and 10, as previously described.

The operation of the last described form of the invention is carried out by moving the assembled tubes 25 and 26 upwardly or downwardly over the convex surfaces to be painted, and by reason of

the spray action through the spray units 4, the surface is covered with a coat of paint.

The form of the invention shown and described is not restrictive but may be made in many ways within the scope of the appended claims.

What is claimed is:

1. A device for painting a cylindrical surface, comprising a flexible annular paint supplying tube, the ends of which are arranged in overlapping relation with respect to each other, inwardly directed nozzles supported by and communicating with the said tube, and roller means supported by the said tube for spacing the said nozzles from the surface to be painted.

2. A device for painting a cylindrical surface, comprising an annular flexible paint supply tube of spring material arranged for reducing the diameter of the annulus formed by said tube, inwardly directed nozzles supported by and communicating with said tube, and spacing means supported by said tube and arranged for spacing said nozzles from the surface to be painted.

3. In a device for painting a cylindrical surface, a supply tube comprised of a length of tube in the form of an annulus and having the ends thereof arranged in overlapping relation with respect to each other, inwardly directed nozzles supported by and in communication with said tube, a valve including a projecting trigger, said valve being operatively connected with one of said nozzles near one end of said tube for controlling the supply of fluid thereto, said trigger being arranged to be contacted and actuated by the end of said tube other than the end in which said valve operated nozzle is located; and spacer means supported by said tube for contacting and spacing all of said nozzles from the surface to be painted.

FESTUS C. PHILLIPS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,611,920	Kinzbach	Dec. 28, 1926
1,850,238	Maynard	Mar. 22, 1932
1,960,725	Bramsen et al.	May 29, 1934
2,286,316	Focha	June 30, 1942
2,357,144	Stair	Aug. 29, 1944