PORTABLE WASHING AND RINSING MACHINE

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ABSTRACT OF THE DISCLOSURE

A wheeled chassis having a washing solution tank and a rinse water tank mounted thereon, with a compressed air manifold connected to the tanks for pressurizing the contents thereof. At least one spray gun has a flexible hose connectable selectively to the two tanks, and a nozzle equipped flexible hose is also provided on the manifold for blowing of air. The machine may be used for cleaning the interior of railroad cars, in which event compressed air may be supplied by connection of the manifold to the signal line of the car.

This invention relates to new and useful improvements in cleaning machines, and in particular the invention concerns itself with a portable cleaning machine having facilities for spraying a washing solution and rinse water in the performance of general cleaning operations. Although the portable machine of the invention has general utility, as for example in cleaning walls and ceilings of buildings, et cetera, the machine is especially well suited for cleaning the interior of railroad passenger cars.

It is, therefore, the principal object of the invention to provide a portable cleaning machine which may be conveniently moved into and through the interior of railroad cars, the machine having tanks from which a washing solution and rinse water may be sprayed under force of compressed air by spray guns connected to the tanks by flexible hoses, whereby washing, rinsing and general cleaning of the car interior may be quickly and easily carried out.

Another important object of the invention is to provide a portable cleaning machine which does not require to be motor-driven and which is powered solely by compressed air, the compressed air supply being conveniently obtained from the signal line of the car in which the machine is used.

Another object of the invention is to provide a portable cleaning machine wherein multiple outlets for washing solution and rinse water are provided so that several spray guns may be used by several workers at the same time for quickly carrying out the cleaning operation.

Another object of the invention is to provide a portable cleaning machine wherein the washing solution and rinse water tanks are mounted on a wheeled chassis and where in the compressed air connections as well as the spray gun connections are carried by the tanks themselves, the entire device being simple in construction, light in weight, easily maneuverable, convenient in use, and adapted for inexpensive manufacture.

With the foregoing more important objects and features in view and such other objects and features as may become apparent as this specification proceeds, the invention will be understood from the following description taken in conjunction with the accompanying drawings, wherein like characters of reference are used to designate like parts, and wherein:

FIG. 1 is a side elevational view of the portable washing and rinsing machine of the invention;
FIG. 2 is a top plan view thereof, with the air supply, spray gun and blow nozzle hoses omitted;
FIG. 3 is a side elevational view of one of the spray guns with its associated hose; and
FIG. 4 is a fragmentary vertical sectional view of a railroad car with the machine of the invention shown therein on a reduced scale.

Referring now to the accompanying drawings in detail, more particularly to FIGS. 1 and 2, the portable washing and rinsing machine of the invention is designated generally by the reference numeral 10. The same comprises a chassis 11 which may be conveniently fabricated from angle iron, or the like, and provided with traveling wheels, preferably casters 12.

A washing solution tank 13 and a rinse water tank 14 are mounted on the chassis 11, these tanks preferably being cylindrical with closed ends and horizontally disposed, as illustrated. The tanks may be mounted on the chassis in any suitable manner, as for example, the tank 13 may be held in place by a pair of wire rod frames 15, and the tank 14 may be held by another wire rod frame 16 and by one or more encircling straps 17, as will be readily understood. The rinse water tank 14 preferably has a larger capacity than the washing solution tank 13, as for example 24 gallons for the former and 17 gallons for the latter, although the capacity of both tanks may be the same, if so desired. The washing solution in the tank 13 may be a mixture of water and suitable detergent, both tanks 13, 14 being provided at the top thereof with removable plugs 19 so that the tanks may be filled. Also, suitable drain valves 19 may be provided at the bottom of the tanks, for obvious reasons.

The washing solution in the tank 13 and the rinse water in the tank 14 are pressurized by compressed air delivered through a manifold designated generally by the numeral 20. This manifold is supported by the tanks themselves and includes a plurality of pipe nipples and T's connected together substantially as shown, so as to accommodate various fittings presently described. The manifold includes a T 21 having a branch 22 connected to the tank 13, and another T 23 having a branch 24 connected to the tank 14, whereby compressed air from the manifold is delivered into the two tanks for pressurizing the contents thereof. A shutoff valve 25 is provided in the branch 22, this valve being closed when it is desired to pressurize only the tank 14 in exclusion of the tank 13. A similar valve 26 is provided in the manifold upstream from the T 23, so that with the valve 25 open and the valve 26 closed, the tank 13 may be pressurized in exclusion of the tank 14. The portion of the manifold between the T's 21 and 23 carries a pressure gauge 27 and an excess pressure relief or "safety" valve 28, while the end of the manifold beyond the T 23 is equipped with a normally closed vent valve 29.

The compressed air inlet is provided at the other end of the manifold where the manifold is equipped with suitable quick-acting coupling means 30 for separable connection of a flexible hose 31 extending to the machine from a source of compressed air. A pressure regulating valve 32 is provided in the manifold at a point between the inlet connection 30 and the T 21, whereby the pressure of air admitted into the tanks 13, 14 may be held within set limits, say between 40 and 60 p.s.i. with a 50 p.s.i. normal, as indicated by the gauge 27. In addition, the manifold may include a T 33 between the inlet connection 30 and the pressure regulator 32, the T 33 being provided with a shutoff valve 34 having connected thereto a flexible air hose 35 provided with a nozzle 36. This nozzle-equipped air hose may be used generally for blowing off dust, standing water and other such purposes when the valve 34 is opened. Since the air blown through the tube 35 and nozzle 36 may be at maximum available pressure, the connecting T 33 may be in advance of the pressure regulating valve 32, as shown.

The exhaust air is provided through the exhaust duct 37 and the exhaust manifold 38, through which the exhaust air is discharged into the atmosphere, as illustrated.
The air pressurized rinse water in the tank 14 is discharged through an outlet pipe 37 equipped with a suitable shutoff valve 38 and with a suitable strainer 39, the outlet then being divided by a T 40 into two branches 37a, 37b, each equipped with a shutoff valve 41 and with a connector 42 for a flexible hose leading to a spray gun as hereinafter described, the arrangement of the two outlet branches being best shown in FIG. 2. Similarly, the washing solution in the tank 13 is discharged through an outlet 43 equipped with a shutoff valve 44 and with a strainer 45, the outlet then being divided by a T 46 into two branches 43a, 43b, each equipped with a shutoff valve 44 and with a flexible hose connector 45.

Reference is now drawn to FIG. 3 which shows one of the spray guns 46 having a pistol-type handle 47 and a trigger-like actuator 48. A rigid spraying tube 49 extends from the handle and is equipped with an adjustable spraying tip 50. A suitable length of flexible hose 51 has one end thereof connected to the spray gun 46 by a separable coupling 52, while the other end of the hose is separably and selectively connectable to either of the connectors 45' on the two branches of the washing solution outlet 43, or to either of the connectors 42 on the two branches of the rinse water outlet 37. Thus, the same spray gun may be used for either the washing solution or the rinse water, although in actual practice four guns may be used, each with its own flexible hose, thus permitting two workers to wash and to workers to rinse in a quick performance of the cleaning operation.

As will be observed, the aforementioned tank supporting frames 15 and 16 are provided with hook-like projections 52, forming racks around which the various flexible hoses may be wound for compact storage when the machine is not in use.

As already indicated, the machine may be used for general cleaning purposes, such as for example, in washing walls and ceilings of buildings, washing automobiles in service stations, and the like. However, the machine is particularly intended for cleaning the interior of railroad passenger cars, a portion of one such car being shown at 53 in FIG. 4. By virtue of its compact arrangement, small size and light weight, the machine 10 may be conveniently moved into and through the interior of the car, its caster-equipped chassis permitting the machine to be easily maneuvered in the car vestibule 54 and through the aisle between the seats 55. Moreover, the car itself furnishes a readily available supply of compressed air needed for operation of the machine, this air supply existing in the signal line 56 with which each car is customarily provided. Air pressure in the signal line is maintained either by a locomotive or by compressor facilities at the station or yard where the car is being serviced. The signal line 56 is provided at each end of the car with a flexible hose 57 for connection to another car by standard coupling means 58. Such coupling means may be used for connecting the air supply hose 31 of the machine to the signal line hose 57, whereby operation of the machine by compressed air from the signal line may be readily effected.

While in the foregoing there has been described and shown the preferred embodiment of the invention, various modifications may become apparent to those skilled in the art to which the invention relates. Accordingly, it is not desired to limit the invention to this disclosure, and various modifications and equivalents may be resorted to, falling within the spirit and scope of the invention as claimed.

What is claimed is new is:

1. The combination of a railroad car having a signal line carrying compressed air, and a portable machine for washing and rinsing the interior of said car, said machine comprising a wheeled chassis of a size readily movable through the car interior, a washing solution tank and a rinse water tank mounted on said chassis, a compressed air manifold communicating with said tanks for pressurizing the contents thereof, at least one spray gun having a flexible hose connectable selectively to said tanks, and a flexible compressed air hose connecting said manifold to said signal line of said car.

2. The combination as defined in claim 1 together with quick-acting coupling means separably connecting said compressed air hose to said manifold and to said signal line.

3. The combination as defined in claim 1 together with a pressure regulating valve provided in said manifold between said compressed air hose and said tanks.

4. A portable machine for washing and rinsing a railroad car which has a signal line carrying compressed air, said machine being fully self-contained except for a compressed air supply and comprising in combination a wheeled chassis of a size readily movable through the railroad car, a tank containing a washing solution and a tank containing rinse water mounted on said chassis, a compressed air manifold having first and second branches communicating with the respective tanks for pressurizing the contents thereof, a washing solution outlet and a rinse water outlet provided on the respective tanks, at least one spray gun having a flexible hose connectable selectively to the washing solution and rinse water outlets, a flexible compressed air supply hose adapted for quick connection to the signal line of a railroad car, and quick-acting coupling means separably connecting said compressed air supply hose to said compressed air manifold.

References Cited

UNITED STATES PATENTS
2,424,468 7/1947 Keathley ----- 239—305 X
3,194,438 7/1965 Walker et al. ----- 239—172 X
3,219,275 11/1965 Green -------------- 239—172

ALLEN N. KNOWLES, Primary Examiner

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