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RUST PROOFING APPARATUS

Filed April 2, 1930

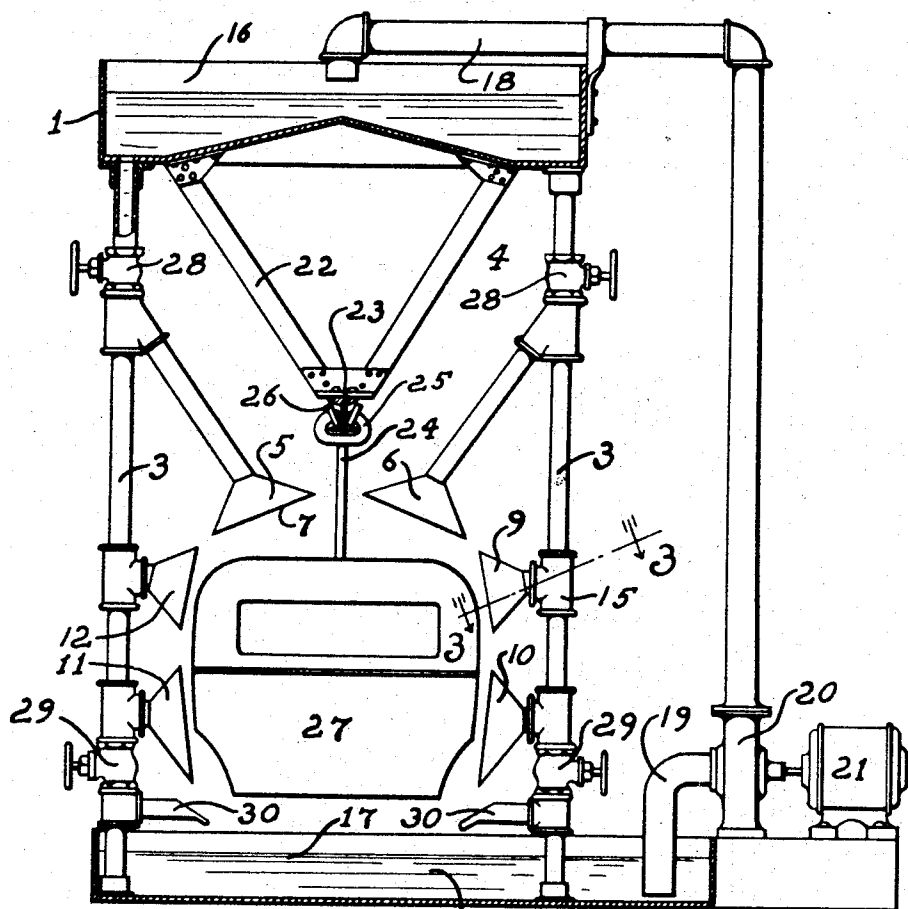


Fig. 2.

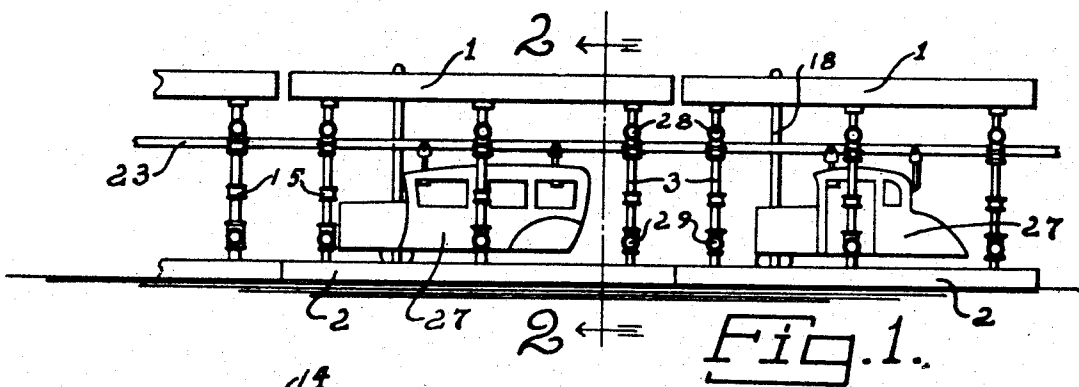


Fig. 1.

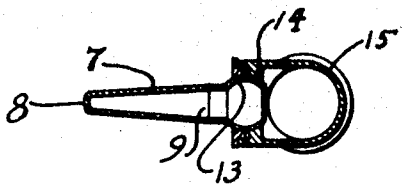


Fig. 3.

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RUST PROOFING APPARATUS

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This invention relates to an improved means for rust proofing metal bodies, particularly automobile bodies.

Heretofore, in treating automobile bodies with rust proofing solutions such as bonderizing and parkerizing solutions, it has been customary to submerge the bodies in tanks or baths of enormous capacity. This method involves employment of vast quantities of the solution and space consuming equipment and causes substantial loss by vaporization. The weight of the tanks and baths frequently prohibits their installation on upper floors of plant buildings where they should properly be located to maintain continuous production lines.

The main objects of this invention are to provide an improved means for treating bodies with rust proofing solutions which does not require heavy space consuming equipment and the utilization of large quantities of liquid; to provide improved spraying apparatus for applying a rust proofing solution on continuously moving bodies; to provide means of this kind by which the entire exterior of a body is sprayed with the solution during continuous movement of the body; and to provide improved spraying nozzles which discharge the solution substantially in sheet form.

Further objects of this invention are to provide means for washing vehicle bodies with alkali, rinsing the bodies with water, treating the same with a rust proofing solution and finally rinsing the excess solution in spraying operations during progressive movement of the body.

An illustrative embodiment of this invention is shown in the accompanying drawing, in which:

Fig. 1 is a fragmentary side elevation of our improved spraying apparatus.

Fig. 2 is a vertical section taken on line 2—2 of Fig. 1.

Fig. 3 is a section taken on line 3—3 of Fig. 1.

In the form shown, our improved rust proofing apparatus includes a series of pairs of tanks 1 and 2 which are located one above the other. The spraying units are substan-

tially identical and for this reason only one unit is specifically described herein. The upper tank 1 is supported upon pipes 3 which extend into the lower tank 2 and communicate at their upper ends with the upper tank 1. These pipes are arranged along the longitudinal edge portions of the tanks 1 and 2 forming a passageway 4.

An upper pair of nozzles 5 and 6 having elongated discharge ends 7 in which a slot 8 is formed, communicate with the pipes 3. The elongated ends 7 of the discharge nozzles 5 and 6 are disposed at opposite inclinations to each other and are located substantially at the center of the passageway 4.

Communicating with the pipes 3 are lower nozzles 9, 10, 11 and 12 which are located at the sides of the passage 4. These nozzles are substantially alike in construction and they each have a ball joint part 13 which is swiveled in a socket 14 of a T-shaped pipe connection 15.

The tanks 1 and 2 have open upper extremities 16 and 17 into which a filling pipe 18 and a suction drain pipe 19 respectively extend. The drain pipe 19 is connected with the inlet of a pump 20 having a driving motor 21 and the pipe 18 is connected with the outlet of the pump.

Mounted on the lower wall of the upper tank 1 is a supporting structure 22 which extends into the passageway 4 and supports a track 23. Shiftably mounted on the track 23 are supports 24 having a yoke shaped head 25 on which rollers 26 are journaled. The supports 24 are adapted to convey a metal automobile body 27 longitudinally through the passage.

In operation, rust proofing solution is fed into the upper tank 1 from a source, not shown. The solution passes downwardly under the action of gravity through the pipes 3 and into the nozzles from which it is discharged in sheet like form on the exterior of the body 27 while the body is moving progressively through the passage. The discharge ends 7 of the nozzles substantially form an arch through which the body 27 is conveyed. The excess solution drips from the body 27 and is collected in the lower tank or pan 2

from which it is lifted through the pipes 18 and 19, by the pump 20 into the upper tank 1 where it is again discharged or allowed to recirculate through the system. The lower nozzles 9, 10, 11 and 12 may be adjusted in position so as to correspond to the curvatures of the upper and lower portions of bodies of different types, thereby assuring application of the solution on the entire side and curved surfaces of the body.

Upper and lower valves 28 and 29 are provided in the pipes 3 for permitting either of the tanks to be completely drained so as to allow convenient cleaning thereof. By closing the upper valves 28 all the solution may be retained in the upper tank 1 and by opening the lower valves 29 the solution may be drained through the outlets 30 directly into the lower tank 2.

The adjacent spraying units illustrated in Fig. 1, are intended to be used in a continuous body treating process in which the first spraying unit from the right is provided with a washing solution containing an alkali, the second is provided with a rinsing liquid, such as water, the third is provided with a rust proofing solution, and the fourth, not shown, is provided with a rinsing solution such as water. With this apparatus, the vehicle bodies are successively subjected first to an alkali wash, then to a rinsing solution, then to the rust proofing solution and lastly to a final rinsing solution while the bodies are progressively moved through the passage between the pipes 3.

Although but one specific embodiment of this invention has herein been shown and described, it will be understood that various changes including the size, shape and arrangement of parts may be made without departing from the spirit of our invention and it is not our intention to limit its scope other than by the terms of the appended claims.

We claim:

1. In apparatus for rust proofing bodies, a pair of spaced tanks, one above the other, side pipes communicating with the upper tank and forming a passage bounded by said tanks and side pipes, means in said passage for shiftably supporting a body, and a plurality of outlet nozzles located below said upper tank communicating with said side pipes and extending inwardly into said passage, the discharge ends of said nozzles forming an arch for receiving said body, and means for feeding a rust proofing solution from the lower tank to the upper tank.

2. A device of the class described comprising an upper rust proofing solution tank, pipes below said tank for supporting the latter and communicating with the side portions thereof forming a passageway therebetween, a track extending longitudinally of said passageway, means movably mounted on said track for conveying a body through said

passageway, and a plurality of nozzles communicating with said pipes and extending inwardly of said passageway, the discharge ends of said nozzles forming an arch in the interior of said passageway for receiving said body.

3. A device of the class described comprising an upper rust proofing solution tank, pipes below said tank for supporting the latter and communicating with the side portions thereof forming a passageway therebetween, a track extending longitudinally of said passageway, means movably mounted on said track for conveying a body through said passageway, a plurality of nozzles communicating with said pipes and extending inwardly of said passageway, the discharge ends of said nozzles forming an arch in the interior of said passageway for receiving said body, a lower tank at the bottom of said passageway for collecting said rust proofing solution after it has drained from said body, and means for pumping the collected solution into said upper tank.

4. In a device of the class described a series of adjacent tanks, pipes communicating with the side portions of said tanks supporting the same and forming a continuous passage therebelow, a support on said tanks extending longitudinally through said passage, a plurality of nozzles communicating with said tanks having their discharge ends directed inwardly of said passage, and means movably mounted on said support for progressively conveying bodies through said passage and past said nozzles to subject said bodies to the action of respectively different contents of said tanks.

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