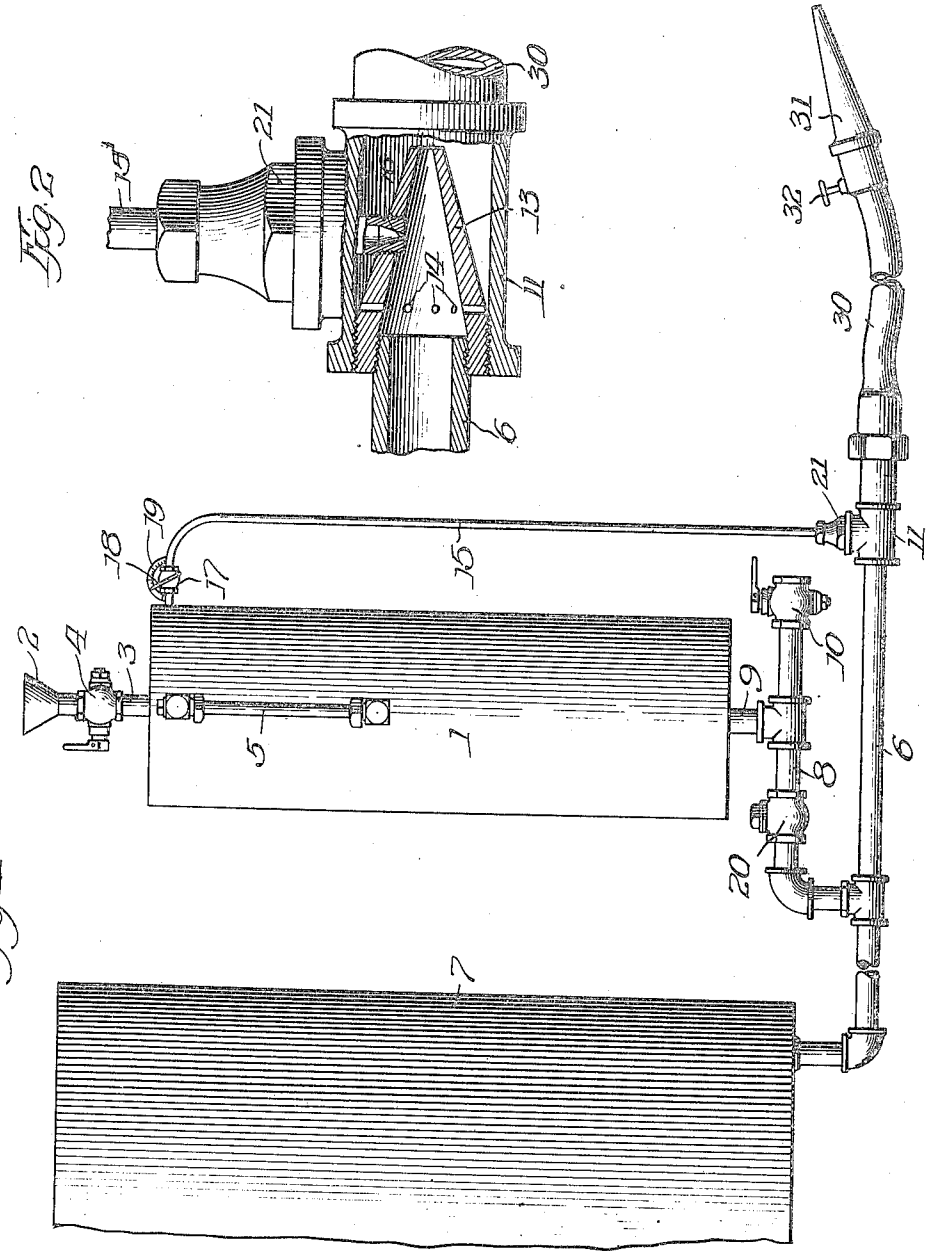
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METHOD OF CLEANING SURFACES.

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1,198,036.

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METHOD OF CLEANING SURFACES.

1,198,036. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed July 1, 1915. Serial No. 37,603.

To all whom it may concern:

Be it known that I, ROBERT E. JACKSON, a citizen of the United States, residing at Victoria, in the county of Lunenburg and State of Virginia, have invented certain new and useful Improvements in Methods of Cleaning Surfaces, of which the following is a specification.

My present invention relates in general to the cleaning of surfaces and is particularly efficacious for cleaning locomotives, engines, automobiles and the like, where it is necessary to remove an accumulation of grease, dirt, mud, etc., and to impart to the cleaned surface a smooth lustrous polished appearance without bleaching or otherwise deteriorating the paint.

It has heretofore been customary to clean locomotives by wiping them off with oily waste but the accumulation of thick grease and dirt upon the running gear cannot be removed in this way. It has also been attempted to clean them by means of a stream of water directed against the surface to be cleaned, but water alone does not satisfactorily remove the accumulated dirt and grease and, furthermore, water causes the exposed surfaces to rust so that the locomotive presents a rusty dirty appearance.

The primary object of my present invention is to provide a method for satisfactorily cleaning surfaces of the character above mentioned which will not only loosen and remove the dirt, dust, mud, thick grease and the like, which has collected upon the vehicle, but will also polish the cleaned surfaces, prevent rusting thereof and impart to them a polished lustrous appearance.

I have found that I can accomplish the desired ends and obtain very effective and satisfactory results by directing against the surfaces to be cleaned a stream of water under pressure containing a small quantity of oil thoroughly mixed with the water, which mixture not only removes the accumulated matter on the surfaces to be cleaned, but also leaves an oily film over the cleaned surfaces which prevents rusting of the parts and presents a lustrous polished finish. In order to accomplish the desired results I have found that it is essential that the oil be used only in small regulated quantities and that it be thoroughly commingled with the water so that an intimate mixture is delivered against the surface to be cleaned. Experimentation has shown that if too much oil is used or if the oil is not thoroughly mixed the actual cleaning of the surfaces and the removal of the accumulated matter is imperfectly accomplished, and, furthermore, that the oil is unevenly distributed so that the surfaces when the cleaning operation is completed present a blotched and unattractive appearance.

One practical and preferred apparatus for carrying my invention into effect is disclosed in my prior Patent, No. 1,137,626, granted April 27, 1915, but it should be manifest that my invention is capable of being carried out by other apparatuses than the one disclosed in that patent.

To facilitate an understanding of my invention I have shown on the accompanying drawings an apparatus similar to the one shown in my prior patent, and referring to the drawings, Figure 1 is an elevational view of an apparatus for carrying out my method, and Fig. 2 is an enlarged fragmentary sectional view of the device which breaks up and thoroughly commingles the oil with the stream of water.

On the drawings reference character 1 indicates a tank designed to contain the desired quantity of oil, a low grade oil being very suitable in practising my invention. The tank is equipped with a filling funnel 2 communicating with the tank through a pipe or conduit 3 which is provided with a cut-off valve 4 designed to be closed after the tank is charged with oil. I also preferably equip the tank with a sight or gage glass 5 to enable the attendant to perceive the height of oil in the tank.

A pipe 6 is connected at its intake end with a reservoir 7 or other suitable source of water supply under pressure, my method being most effective when hot water is employed, although in many instances very good results may be obtained with water of lower temperature. A branch pipe 8 connected with the pipe 6 communicates with the bottom of the tank 1 through

a short pipe 9, and is provided at its end remote from the pipe 6 with a drain cock 10 to facilitate the cleaning of the tank 1 when necessary. When the apparatus is in use the drain cock 10 is, of course, closed. A check valve 20 is interposed in the pipe 8 between the pipe 6 and the tank 1 to permit flow of water toward the tank 1 and prevent return flow to the pipe 6. At its forward end the pipe 6 is connected to a casing 11 to which a hose 30 is attached, said hose 30 being of suitable length to reach all parts of a locomotive and having at its end a suitable nozzle 31 from which the water and oil are discharged and delivered against the surfaces to be cleaned. Within the casing 11 there is mounted a device thoroughly commingling the oil with the stream of water. The device is shown in the present instance as comprising a conical nozzle-shaped member 13 gradually tapering from the pipe 6 to a restricted discharge opening at its other end, which is disposed centrally of the casing 11. The member 13 is also provided adjacent to its larger end with a circumferential row of holes or apertures 14 through which a part of the stream of flowing water passes so that it surrounds the restricting member 13. It will be manifest that when a stream of water under pressure flows from the pipe 6 toward the hose 30 a portion of the water will pass through the apertures 14 and flow in a stream around the member 13 under a reduced pressure while a portion of the stream will be restricted and subjected to a higher pressure until it emerges from the restricted delivery end of the member 13 into the center of the surrounding stream. This restriction of the stream and its ejectment under high pressure into the center of a surrounding stream under lower pressure causes a violent agitation of all the particles of the stream to take place which thoroughly agitates and commingles the oil with the water.

The manner of admission of the oil will now be described.

An oil conduit or pipe 15 of relatively small diameter is connected at one end to the upper portion of the tank 1 and at its lower end leads into the wall of the member 13 and discharges into the interior thereof through a small feed opening 16. The pipe 15 is preferably threaded into the wall of the member 13 and suitable packing and packing nuts 21 are employed to close the top of the casing 11 around the oil pipe. At a suitable point in its length, and preferably adjacent to the tank 1, the pipe 15 is provided with an oil regulating valve 17, the stem of which is preferably equipped with a pointer 18 designed to operate with a graduated scale 19, from which the extent of opening of the valve may be determined. By turning the valve 17 through the medium of the pointer 18 a definite proportion of oil is obtained which may be varied at will by adjusting the valve to give the desired regulated flow of oil.

In carrying out my improved method the hand valve 32 adjacent the nozzle 31 is opened, thereby permitting a flow of water under pressure from the reservoir 7. A portion of the water enters through the pipes 8 and 9 into the tank 1 and maintains a pressure in the tank below the oil, which is of less specific gravity than the water, sufficient to force the oil into the pipe 15 in quantities determined by the regulating valve 17. The stream of flowing water under pressure as it enters the casing 11 is divided, a portion passing through the apertures 14 to form a stream under a lesser head and hence at a lower pressure surrounding the restricting member 13, and a portion passing, under increased pressure and at higher velocity, through the restricting member from whence it is delivered into the surrounding stream. The oil which enters the member 13 through the opening 16 is first subjected to the increased pressure within the restricting member and is then delivered at a high velocity from the member into the center of the surrounding stream, the construction being such that at the point of emergence, at high pressure, from the member 13 the pressure is suddenly decreased. This action causes the contents of the casing adjacent and beyond the delivery point of the member 13 to be violently agitated, with the result that the oil in the stream is thoroughly commingled with the stream of water and the combined stream is carried along to the nozzle where it is ejected and delivered against the surface to be cleaned. The stream delivered in this condition is very effective in loosening and assisting in the removal of the accumulated matter from the surfaces and it also leaves a thin film over the cleaned surfaces which prevents rusting of the parts and produces a desirable lustrous appearance.

I claim:

1. The method of cleaning surfaces having thereon deposits of grease and dirt, which comprises admitting oil in regulated quantities to a stream of water under pressure, delivering the combined stream at a high velocity into a surrounding stream of water at a lower pressure and less velocity thereby violently agitating and commingling thoroughly the water and oil, and impinging the resultant stream against the surface to be cleaned at such a high velocity as to disintegrate and remove said deposits therefrom.

2. The method of cleaning surfaces having thereon deposits of grease and dirt,

which consists in restricting the flow of a stream of water under pressure and thereby increasing its velocity, admitting oil in small regulated quantities to the stream adjacent to the point of maximum restriction, delivering the stream of oil and water into the center of a surrounding stream of water moving at a lower velocity, thereby thoroughly commingling the oil and water, and causing the resultant stream to impinge against the surface to be cleaned at such a high velocity as to disintegrate and remove said deposits therefrom.

ROBERT E. JACKSON.