G. DURHAM & C. W. McGUIRK.

METHOD OF CLEANING SURFACES.

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1,179,708.

Patented Apr. 18, 1916.

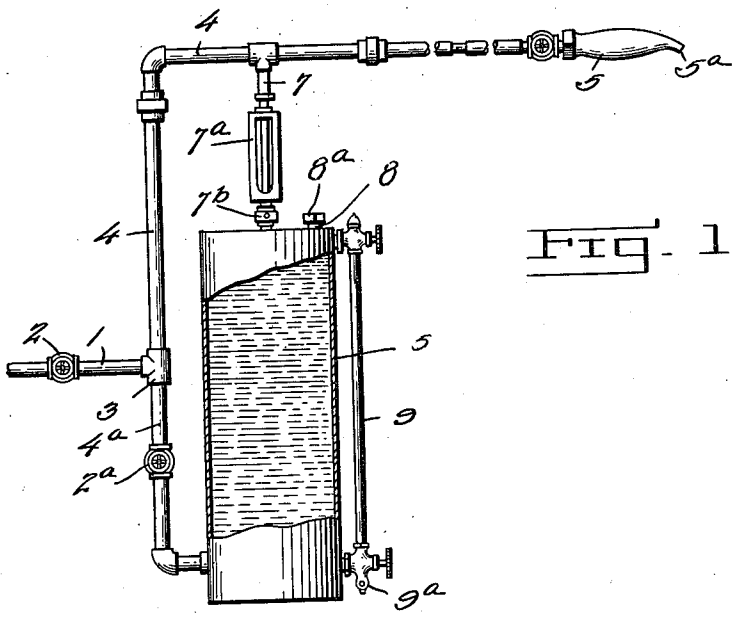


Fig. 1.

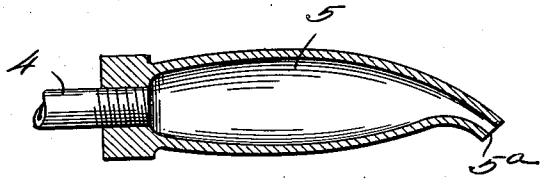


Fig. 2.

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METHOD OF CLEANING SURFACES.

1,179,708. Specification of Letters Patent. Patented Apr. 18, 1916.

Original application filed October 13, 1913, Serial No. 794,811. Divided and this application filed September 21, 1915. Serial No. 51,898.

To all whom it may concern:

Be it known that we, GEORGE DURHAM and CHARLES W. McGUIRK, citizens of the United States, residing at Scranton, county of Lackawanna, and State of Pennsylvania, have invented certain new and useful Improvements in the Methods of Cleaning Surfaces, of which the following is a specification.

Our invention relates to processes of cleaning surfaces, especially those of locomotives, engines, and other vehicles, through the use of which process the accumulations of dust, mud, oily particles, and the like, with which the frames, running gear, and other parts of locomotives, engines, and other vehicles have become covered in use may be rapidly and economically removed.

As is well known, the accumulation of foreign matter upon the exterior of locomotives, engines, and other vehicles is frequently so great as to prevent careful inspection of the various parts, making it difficult and sometimes impossible to detect fractures or other imperfections which may cause serious accidents. It is desirable, therefore, that the running gear and other parts of the locomotive, engine, or other vehicle be frequently cleaned, and it is customary to clean them by wiping off the foreign matters. This, however, results in an imperfect cleaning, owing to the difficulty in getting at the complicated parts of the running gear and in getting the accumulation of material out of the many recesses therein. To wash off these accumulations with streams of water has proved to be impracticable owing to the presence of oils and grease with which the accumulations are commonly impregnated.

The object of our invention, therefore, is to provide a process by which the accumulations on the locomotive, engine, or other vehicle may be rapidly removed and the frame and parts be left clean and free from oil and other foreign matters.

We have discovered that if to a stream of water oil be admitted in comparatively minute regulated quantities and this combined stream of oil and water be caused to impinge against the surface to be cleaned with sufficient pressure and velocity a most effective and altogether unusual action takes place, as the stream removes from the surfaces practically all of the oily accumulations and other deleterious matters upon the surfaces, leaving them substantially clean and free from these matters. The most efficient result is obtained if the water be heated. The necessary velocity may be imparted to the stream by pressure which may be imparted to the stream initially, though more effective results are obtained if this pressure be suddenly increased, as, for example, by the use of proper nozzles or by other pressure increasing devices. A stream ejected from the nozzle at a pressure of about 70 pounds is effective. In our pending application, Serial No. 794,811, of which this application is a division, we have suggested the use of a stream of air at high velocity, which stream is admitted to the stream of oil and water either at the point of ejectment or at a point between the oil supply and the point of ejectment, and in said prior application, as well as in our Patent No. 1,135,001 granted April 13th, 1915, we have disclosed a suitable apparatus for the carrying out of this process. It will be understood, however, that our present process is not dependent upon the use of any particular apparatus, the essential features being the feeding of the oil in minute regulated quantities to the stream of water and the conveying of this combined stream at sufficient pressure and consequent velocity against the surface to be cleaned.

In the accompanying drawings, Figure 1 shows an elevation partly in section of a suitable apparatus for carrying out the process and Fig. 2 is a detail partly in section showing the form of nozzle.

Referring to the drawings, 1 indicates a water supply pipe connected to any suitable source of supply of water under pressure. This supply may be regulated by valve 2 of suitable construction. A T 3 attached to the water supply pipe 1 provides a connection for two branches of this supply pipe, the main branch 4 being provided at its discharge end with a nozzle 5. The branch 4^a of the water supply pipe leads to the lower end of a suitable tank 6, which may be of the proper size for containing the quantity of oil. The branch 4^a may be controlled by a suitable valve 2^a. At its upper end this receptacle is connected to the water supply pipe 4 by a pipe 7, the indicator or sight gage 7^a and liquid controlling device 7^b. The tank is provided with an inlet 8 having

a removable cap or plug 8^a, also with a gage 9 provided with a drain cock 9^a for indicating the level of liquid in the tank. Any suitable form of nozzle may be employed. The nozzle 5 which is shown is provided with a flattened orifice 5^a, which has the effect of suddenly increasing the velocity of the stream at the point of ejectment. It will, of course, be understood that, as shown in our pending application above referred to, an ejector may be inserted at a point between the oil supply and the point of delivery for the purpose of thus increasing the velocity, although, of course, if the pressure is sufficient no additional means need be provided for thus increasing the velocity. As stated above, the impinging of this stream of oil and water against the surface to be cleaned practically entirely removes the accumulated oily particles and other matters from the surface, and also leaves the surfaces with a very slight dressing of oil which preserves them from rust or deterioration.

We have found in practice that the mineral oils, especially those having a paraffin base, are most effective in carrying out our process.

Having thus described our invention, what we claim is:

1. The herein described process for cleaning surfaces having thereon deposits of grease and dirt which consists in feeding oil in minute regulated quantities to a stream comprising an excess of water and causing the combined stream to be impinged against the surface to be cleaned at such a high velocity as to disintegrate and remove the said deposits therefrom.

2. The herein described process for cleaning surfaces having thereon deposits of grease and dirt which consists in feeding oil in minute regulated quantities to a stream containing an excess of water, suddenly increasing the velocity of the stream, and causing the stream to be impinged against the surface to be cleaned at such a high velocity as to disintegrate and remove the said deposits therefrom.

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