

Patented Jan. 4, 1938

139

Cross Reference

252-99

Examiner

2,104,385

## UNITED STATES PATENT OFFICE

2,104,385

## RADIATOR CLEANING COMPOSITION

Walderssee B. Hendrey, Beacon, N. Y., assignor to  
The Texas Company, New York, N. Y., a corpo-  
ration of Delaware

No Drawing. Application August 27, 1934,  
Serial No. 741,742

2 Claims. (Cl. 87-5)

This invention relates to a radiator cleaning composition adapted to be added to the circulating water of a radiator of an internal combustion engine, for the purpose of removing accumulated dirt and scale and increasing the coefficient of heat transfer of the radiator shell and cylinder block.

Radiator cleaning compositions of this character have been heretofore suggested, which employ alkali metal phosphates or carbonates as ingredients thereof. Likewise, the use of ordinary water glass has been suggested. While these compositions are satisfactory for use in the circulating systems of internal combustion engines which do not employ aluminum pistons or cylinder heads, they are not adapted for use where aluminum is employed, due to objectionable chemical action and corrosion thereof.

It is an object of the present invention to provide a radiator cleaning composition of this character which is adapted for universal use in the various types of internal combustion engine circulating systems now on the market, and which at the same time is highly effective in its cleaning action.

I have discovered that sodium metasilicate, which is usually encountered commercially as the hydrate  $\text{Na}_2\text{SiO}_3 \cdot 5\text{H}_2\text{O}$ , is superior to ordinary water glass and other types of alkali metal compounds heretofore used for radiator cleaners, in that it does not objectionably attack aluminum. At the same time, the metasilicate is highly effective in removing rust, dirt and scale from the radiator shell and passages of the cylinder block. The sodium metasilicate may be used as a powder, or it may be dissolved in concentrated form in water or other solvents. Preferably, I incorporate the metasilicate with a light petroleum fraction, such as kerosene, which serves to remove the oily scum that is generally deposited in the circulating passages of an internal combustion engine radiator. The proportions in which the ingredients may be employed may vary widely. Very satisfactory results may be se-

cured with about equal amounts by weight of sodium metasilicate and kerosene.

I also preferably incorporate in the cleaning composition a small proportion of a corrosion inhibitor, such as sodium bichromate. For example, a proportion of about 0.5-2% by weight of sodium bichromate may be added to the above composition.

In use, the cleaning composition is added to the circulating water of the radiator in a proportion of the order of about  $\frac{1}{2}$ -1 pint of the composition to 2-3 $\frac{1}{2}$  gallons of the circulating water. The engine is then run for about 30 minutes, and the radiator then drained and flushed. Or the composition may be allowed to remain in the circulating system for a longer time, such as over night, when the radiator is then drained and flushed.

In addition to its cleaning action, sodium metasilicate has a rust preventing action for ferrous materials in contact with water. Hence, after cleaning the radiator and refilling with fresh water, the addition of about 0.2-0.8% of  $\text{Na}_2\text{SiO}_3 \cdot 5\text{H}_2\text{O}$  to the fresh water markedly inhibits the rusting of the ferrous portions of an automobile cooling system. The simultaneous addition of kerosene and/or sodium bichromate in the proportions used in the above cleaner would further enhance the protective action.

Obviously many modifications and variations of the invention, as hereinbefore set forth, may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claims.

I claim:

1. A radiator cleaning composition consisting essentially of about equal parts by weight of kerosene and sodium metasilicate.

2. A radiator cleaning composition consisting of about equal parts by weight of kerosene and sodium metasilicate, and about 0.5-2% by weight of sodium bichromate on the weight of the said composition.

WALDERSEE B. HENDREY.