Patented Aug. 2, 1932

1,869,825

UNITED STATES PATENT OFFICE

GERHARD RITTER, OF OGGERSHEIM, AND EDWIN UFER, OF NEUROESSEN, GERMANY, ASSIGNORS, BY MESNE ASSIGNMENTS, TO STANDARD-I. G. COMPANY, OF LINDEN, NEW JERSEY, A CORPORATION OF DELAWARE

RECOVERY OF PURE HYDROGEN

No Drawing. Application filed May 14, 1928, Serial No. 277,781, and in Germany May 27, 1927.

We have found that substantially pure hydrogen can be recovered from gaseous mixtures rich in hydrogen, such for example as hydrogen containing methane, by washing the said gaseous mixture with a low boiling petroleum distillate, in particular the lower fractions thereof, usually fractions boiling between about 20 and 150° C. and preferably such boiling between 20 and 100° C. at temperatures below −60° C. but above the freezing points of these solvents, and preferably under pressures higher than atmospheric. If the washing agent be sprayed into the gas by means of suitable appliances, the greatly increased surface presented enables the impurities to be extracted in a far shorter period of contact between the gas and the absorbent liquid, since the washing agent absorbs much more rapidly; accordingly, the solvent can rapidly be regenerated and the whole process carried out with a smaller amount thereof.

The following example will further illustrate the nature of the said invention which however is not limited thereto.

Example

A low boiling petroleum distillate boiling between 20 and 150° C. is atomized in a scrubber by means of a pressure which is a few atmospheres higher than that prevailing in the scrubber itself. Hydrogen containing about 8 per cent of methane, together with other impurities, is introduced, under a pressure of 50 atmospheres and at a temperature of −80° C. on the counterflow principle into the scrubber containing the liquid mist. The recovered hydrogen is practically pure.

What we claim is:—

1. A process for the recovery of substantially pure hydrogen from gaseous mixtures rich in hydrogen, which comprises washing the said gaseous mixture with a low-boiling petroleum distillate at a temperature of below −60° C. but above the freezing point of the solvent.

2. A process for the recovery of substantially pure hydrogen from gaseous mixtures rich in hydrogen, which comprises washing the said gaseous mixture with a low-boiling petroleum distillate at a temperature of below −60° C. but above the freezing point of the solvent, the said solvent being sprayed into the gas.

3. A process for the recovery of substantially pure hydrogen from gaseous mixtures rich in hydrogen, which comprises washing the said gaseous mixture with a low-boiling petroleum distillate at a temperature of below −60° C. but above the freezing point of the solvent and under a pressure higher than atmospheric pressure.

4. A process for the recovery of substantially pure hydrogen from gaseous mixtures rich in hydrogen, which comprises washing the said gaseous mixture with a petroleum distillate boiling between about 20 and 150° C. and preferably between about 20 and 100° C. at a temperature of below −60° C. but above the freezing point of the solvent.

In testimony whereof we have hereunto set our hands.

GERHARD RITTER.
EDWIN UFER.