

- [54] **GEL FORMATION BY POLYMER
CROSSLINKING**
- [75] Inventor: **James E. Hessert, Bartlesville, Okla.**
- [73] Assignee: **Phillips Petroleum Company,
Bartlesville, Okla.**
- [21] Appl. No.: **629,360**
- [22] Filed: **Nov. 6, 1975**
- [51] Int. Cl.² **E21B 33/138**
- [52] U.S. Cl. **166/294; 106/194;
106/208; 166/270; 166/295; 252/316; 260/29.6
H; 260/DIG. 14**
- [58] Field of Search **252/8.55 R, 8.55 D,
252/316; 166/294, 295, 283, 270; 260/DIG. 14,
29.6 H; 106/194**

[56] **References Cited**
U.S. PATENT DOCUMENTS

3,301,723	1/1967	Chrisp	252/316 X
3,502,149	3/1970	Pence	166/295
3,554,287	1/1971	Eilers	252/8.55 X

3,727,687	4/1973	Clampitt et al.	166/294 X
3,749,172	7/1973	Hessert et al.	166/294
3,785,437	1/1974	Clampitt et al.	166/295 X
3,908,760	9/1975	Clampitt et al.	166/294 X
3,921,733	11/1975	Clampitt	166/294 X
3,926,258	12/1975	Hessert et al.	166/294

Primary Examiner—Herbert B. Guynn

[57] **ABSTRACT**

A composition of matter comprising water, a polymer capable of being crosslinked by polyvalent metal cations, a reducible species containing said polyvalent metal in a higher oxidation state, and a reducing agent selected from among KI, MnCl₂, Mn(NO₃)₂, and K₄Fe(CN)₆, which composition is capable of forming a gel by crosslinking is provided. A method is also provided for in situ gel formation using this crosslinking composition. In one of its embodiments a method is provided for increasing the rate of gel formation by the addition of H⁺ ion.

10 Claims, No Drawings