

REMEMBER WHEN

A look back at the nation's oil & gas industry.



The nation's, as well as Oklahoma's, oil and gas industry is rich in history. As part of a new partnership with the American Oil & Gas Historical Society (AOGHS), Exploring Energy will bring you energy stories from the past in each publication. Also catch "Remember When Wednesday" each fourth Wednesday of the month with AOGHS Executive Director Bruce Wells joining the discussion on KECO 96.5's Exploring Energy show from 8 to 9 a.m. and on 102.3 KWDQ, sponsored by Big Chief Plant Services. For more articles, photos and features, or to support AOGHS, visit www.aoghs.org.

Halliburton Cements Wells

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Erle P. Halliburton in 1921 patented an advanced technology for cementing wells that brought greater production and environmental safety to America's oil fields. With his "Method and Means for Cementing Oil Wells," the young inventor significantly improved how wells were completed after drilling.

Halliburton was 27 years old when he founded his oilfield equipment and service company in Ardmore, Oklahoma, in 1919. He had moved to Ardmore after working in the fields of Burkburnett, Texas. The New Method Oil Well Cementing Company would receive many patents on its way to becoming today's Halliburton.

"It is well known to those skilled in the art of oil well drilling that one of the greatest obstacles to successful development of oil bearing sands has been the encountering of liquid mud water and the like during and after the process of drilling the wells," Halliburton noted in his patent application.

He added that a

typical well's production, hampered by water intrusion that required pumping out, "has caused the abandonment of many wells which would have developed a profitable output."

Halliburton's "new method" cementing process isolated down-hole zones, guarded against collapse of the casing, and allowed better control of the well throughout its producing life. As with many new technologies, some resisted applying his well completion method.

Many oil executives were skeptical of cementing casing; most worried about possible well damage. But Halliburton persisted -- and patented many of today's cementing technologies, including the jet mixer, guide shoe and plug system, pumps, multiple-stage cementing, and offshore methods. He received nearly 50 patents, mostly oilfield-related, but including an airplane tire, a respirator, and a popular metallic suitcase.

For years Halliburton's only oilfield service industry competitor was R.C. (Carl) Baker of Coalinga, California. Baker Oil Tools also held around 50 patents, including a

Gas Trap for Oil Wells in 1908, a Pump-Plunger in 1914, and a Shoe Guide for Well Casings in 1920.

Today, cement is first used soon after a well has been spudded. The surface hole is lined with steel casing and cement to protect freshwater aquifers, according to the Kansas Geological Survey (KGS). Drilling pauses so steel casing can be inserted.

To strengthen the well and further protect the environment, cement is pumped down the surface casing to fill the space between the outside of the casing and the well bore all the way to the surface. A blowout preventer is attached at the top of the surface casing.

When drilling has reached total depth and after well-logging and other tests have been completed, the well is either completed as a producer -- or plugged as a dry hole. To complete the well, a cementing company is called.

"The well bore is filled with drilling fluid that contains additives to prevent corrosion of the casing and to prevent the movement of the fluid from the well bore into the surrounding rock," notes KGS. "Casing may be inserted to a total depth of the hole or a cement plug may have been set at a specific depth and the casing set on top of it."

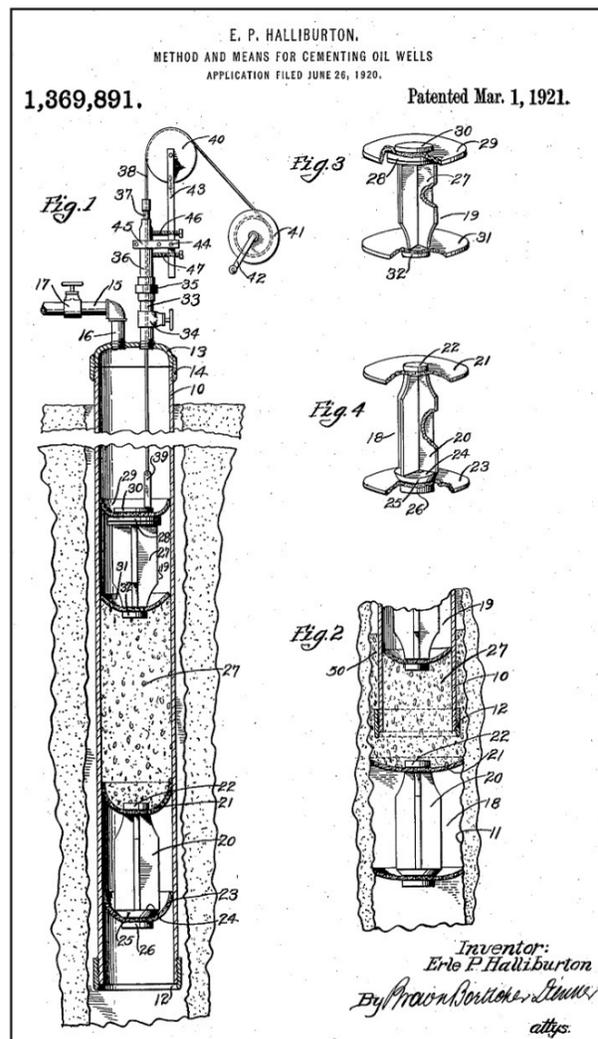
The cement is then pumped down the casing and displaced out of the bottom with drilling fluid. The cement then flows up and around the casing, filling the space between the casing and the well bore.

Then a smaller rig, known as a workover rig or completion rig, is moved over the well bore, and a well-perforating company called.

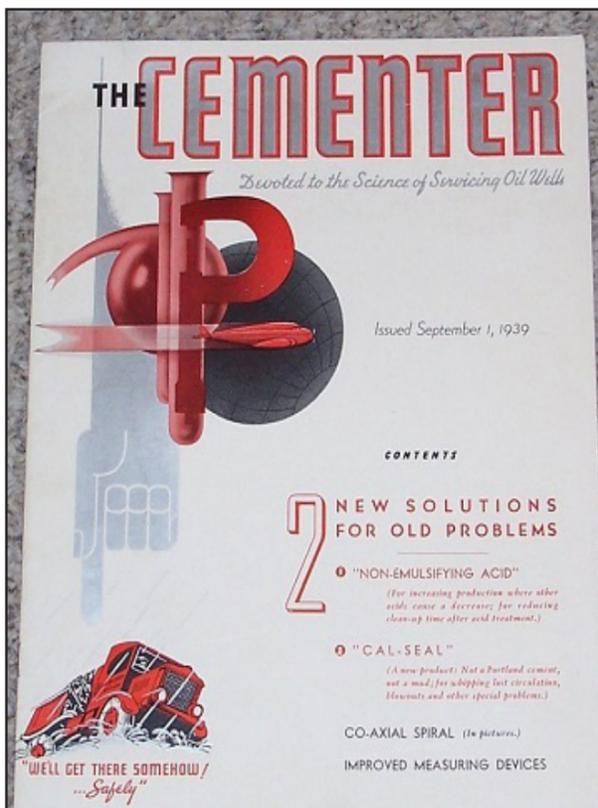
Perforating holes in the casing allow oil and natural gas production to begin.

In 1947, almost three decades after his "Method and Means

for Cementing Oil Wells" patent, Halliburton would be the first to apply another revolutionary oilfield technology: hydraulic fracturing.



Halliburton's cementing process isolated production zones and helped secure the well throughout its producing life.



A 1939 issue of "The Cemente," a Halliburton Oil Well Cementing Company magazine.



An unidentified Halliburton company employee sits in a Model T Ford. In background is an early Halliburton self-propelled truck. Photo courtesy Timothy Johnson.

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