

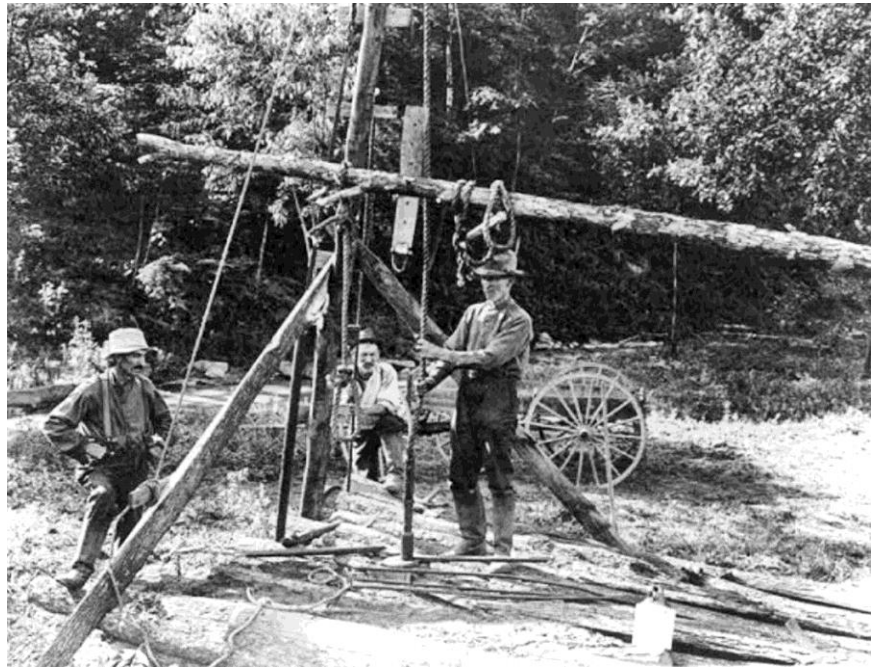
## The Reel Story of the Oil Industry

Steven K. Vernon

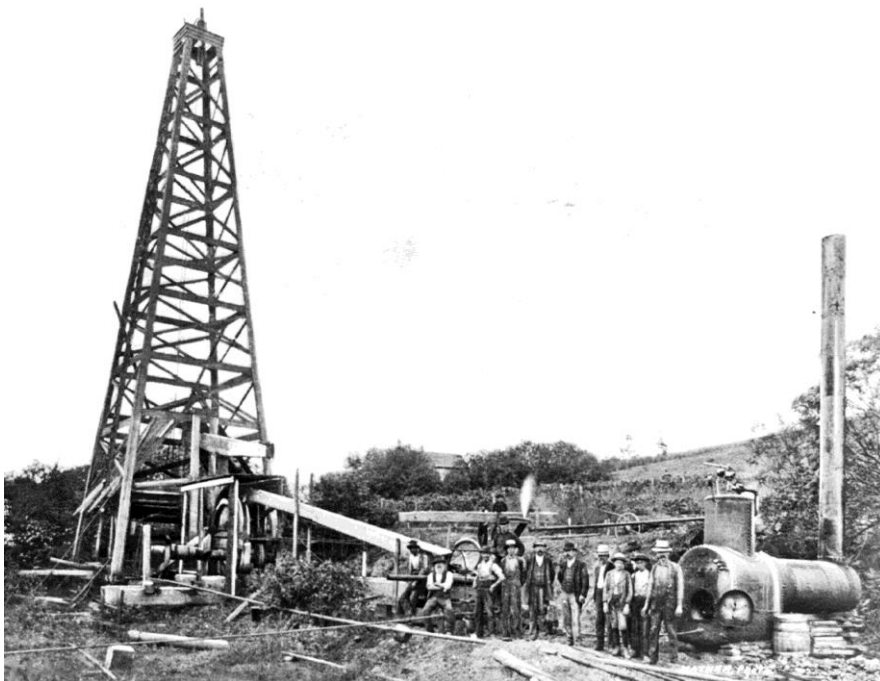
During the second half of the nineteenth century, American investors devoted rapidly increasing levels of attention and funding to at least two industries: petroleum extraction and fishing reel production. A few sagacious individuals cleverly sought success in both industries.

ORCAns are aware by now that a few shops in Kentucky and New York City created a fledgling reel-manufacturing industry in the U.S. before the Civil War. But what of the oil industry? Petroleum has been sought and used for over four-thousand years. Its early uses were varied, from lamp fuel to mortar making to machine lubrication to medical treatments, but it took many centuries before wells were drilled specifically for petroleum.

The ancient Chinese drilled wells using chisels on bamboo rods to pound their way into the ground, and similar methods were used elsewhere for centuries. However, until the nineteenth century, such drilling usually was aimed at recovering underground brine, from which salt could be extracted. In many cases, the petroleum found with the brine deposits was burned to heat the brine and speed up evaporation.



*A spring-pole drilling rig similar to the rig used by the Ruffner brothers in 1808 to drill for brine. (U.S. Dept. of Interior photo)*



*An oil rig from the mid-nineteenth century. A crowd of potential reel inventors gains inspiration from the drilling. (Library of Congress LC-USZ62-39348)*

“Cable-tool drilling” and “percussion drilling” are terms covering the earliest drilling methods. These refer to boring through soil and rock with a heavy chisel-like bit attached to a rod attached, in turn, to a cable of rope or wire. Casings are hammered into the ground to stabilize the holes as the work progresses. Spring-pole drilling, instead of manual drilling, was developed in ancient times and was still being used in the nineteenth century. The method employs a long “spring-pole” to lift the appropriately balanced bit before it is slammed down manually again. In 1808, brothers David and Joseph Ruffner completed what is allegedly the first well in North America that was bored with a mechanically driven spring-pole. The device was powered with horses, and it took eighteen months to bore a fifty-eight-foot hole into a brine deposit near Charleston,

West Virginia. With the invention of the steam engine, the raising and lowering of the bit could be performed more rapidly, and the first mechanized oil rigs were developed.

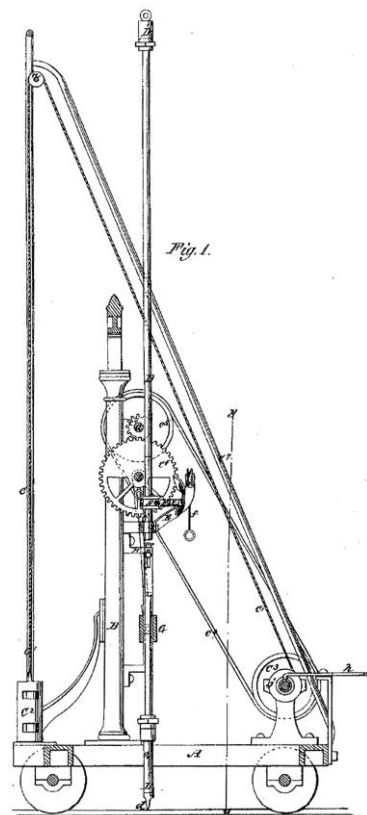
A major technical difficulty in drilling is, of course, the removal of loosened soil and chipped rock, or sludge, as drilling proceeds. This was usually accomplished by forcing water or mud into the hole's casing to bring the sludge to the surface. The procedure required stopping the drilling, flushing the hole, and sharpening the bit before drilling was resumed.

\* \* \*

Now it is time to meet our first petroleum-associated reel inventor. Leonard Atwood<sup>1</sup> was only twenty years-old when he patented a drilling apparatus on May 9, 1865, that employed a perforated, hollow rod above the bit. Water could be forced down the rod with high pressure, and it would exit the rod and flush sludge up within the casing to the surface. It was not the first hollow-rod drilling apparatus, but it had enough novel features to earn a patent. Amazingly enough, his machine was being advertised in newspapers from Maine to Minnesota from April through September, 1865.

Atwood earned at least seven patents for fishing reels, and he would market a variety of models over a period of a couple of decades. His inventive genius was displayed early. He received a medical discharge from the U.S. Navy in 1864. It is uncertain where he went immediately after leaving the Navy, but he was listed in a Norwich, Connecticut, city directory for 1866. From there he had applied for his 1865 patent and for another—for a steam valve—that was granted in 1868.

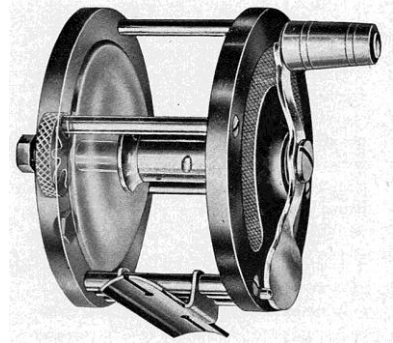
According to a couple of brief biographies,<sup>2,3</sup> upon leaving the Navy, Atwood traveled to Titusville, Pennsylvania, where Edwin Drake had struck oil in 1859. He is purported to have drilled a successful



Atwood's patented drilling machine, 1865

well and to have built the first oil pipeline there, before going to work "for John D. Rockefeller." The original sources supporting this string of events are not known.

I have been unable to find evidence that he drilled a well in Titusville. Furthermore, every source I have located names Samuel Van Syckel as the builder of the first *successful* oil pipeline in



An Atwood reel shown in a 1913 advertisement

## ATWOOD'S PATENT DRILLING MACHINE, PILE DRIVER, AND HYDRAULIC SAND PUMP.

PRACTICAL TESTS having fully demonstrated the superiority of this machine over all others for the purpose of sinking Oil Wells, the undersigned is now prepared to receive orders for the same.

This machinery comprises everything requisite for the boring of oil wells, excepting the STEAM ENGINE AND CAST IRON DRIVING PIPE, (but will be furnished, if desired, at a reasonable price), and dispenses with the use of the Derrick, Rope, Bull wheel and other cumbersome and expensive fixtures now in use, and is so arranged, being constructed on wheels and portable, that it can be easily removed for the purpose of sinking wells in different localities.

THE DETRITUS is removed from the well by our patent Hydraulic process, and does not require the removal of the drill from the boring. This process not only removes all the detritus in from 5 to 10 minutes, but likewise effectually clears out and opens all the small oil veins that are so often entirely closed up by the old process of sand pumping.

WITH THIS MACHINE and a practical engineer, a well can be sunk from 400 to 600 feet within a period of from 15 to 30 days after the soil pipe has been driven.

Arrangements are being made for the construction and delivery of these machines at New York, Norwich, Newburg, N. Y., and Pittsburg, Penna.

For further information, price, terms, &c., address

SIMEON LELAND,

METROPOLITAN HOTEL,

april5-d&w3meop

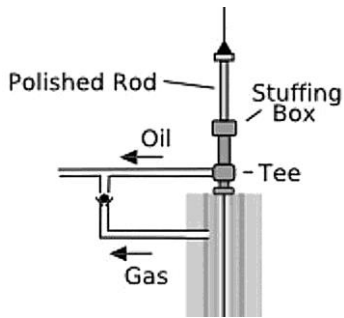
New York.

This advertisement appeared in newspapers from Maine to Minnesota for six months in 1865.

1865, which ran about six miles from one Pennsylvania oil field to a railhead. If, in fact, Atwood went to work for Rockefeller, he probably would have been employed by the Weikel Run and McElhinny Oil Company, chartered on January 6, 1865, in Cincinnati, Ohio, with capitalization of \$230,000. John D. Rockefeller was a company director, who was expanding his horizons beyond the Ohio refining businesses in which he had been involved. The company drilled on the Weikel farm near Titusville.

By the time Atwood could have arrived in the Titusville area, only 150 or so of the 3000 wells drilled thereabouts were still yielding oil. Therefore, it is not surprising that he was living in New York City, occupation "elevators," by 1868. He boarded in the Metropolitan Hotel, which was co-owned by Simeon Leland, whose name had appeared at the bottom of the ads for Atwood's drilling machine.

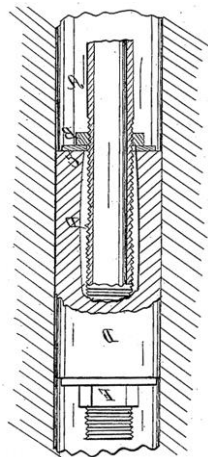
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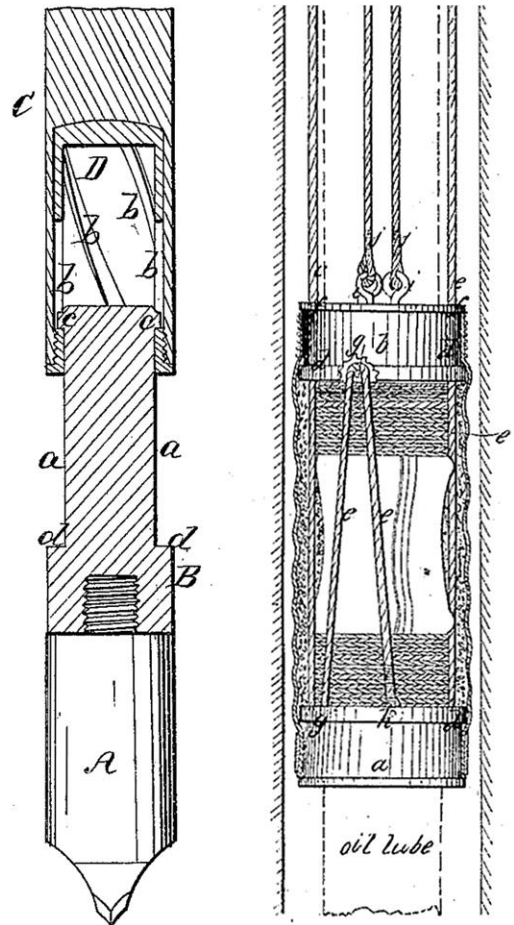
The stuffing box on a rig prevents oil and gas from leaking around the polished rod.

Oil rig pumps require stuffing boxes, chambers with compressible packing that prevents oil and gas from leaking out around the reciprocating pump rod. Alonzo Fowler, an Ithaca, New York, dentist who later would patent his highly sought, highly brittle, hard-rubber "Gem" fly reel, was a co-inventor of

a stuffing box patented in 1865. His co-patentee was Edward J. Morgan, a physician and surgeon in the Ithaca medical office of Morgan and Bishop. The inventors used gutta-percha for their packing but acknowledged that "Any suitable material may be used for a packing cylinder, such...as felt, leather, cloth or other material which can be expanded or enlarged in its diameter by means of compression applied to its ends." Fowler's experience with using gutta-percha to fill dental cavities served him well.



The hatched area D represents Fowler's packing material between the casing and the drilling rod. It is compressed by raising the washer above nut F toward the upper washer C.



(left) Charles Noe's drill is automatically rotated after each downward blow. (right) Noe's packing e can be expanded to fill the space between the casing and rod of the drilling rig.

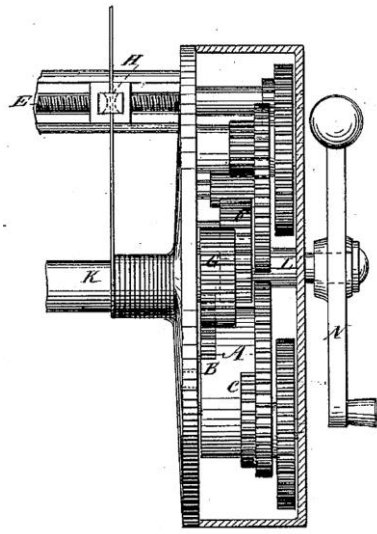
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Charles L. Noe<sup>4</sup> became wealthy after he co-designed the internationally acclaimed Neapolitan bonnet in 1841 and manufactured it as a partner in Pattison, Roe, & Company, New York City. He appears to have retired around 1857, and he and his family moved to Bergen Point, New Jersey. During "retirement," Noe became more active in banking and politics than he had been in New York. He also patented several mechanical inventions, two of which would have been useful in the oil industry.

Noe's "Improvement in drills" was patented on March 14, 1865. The machine was designed to bore "holes in rock or other hard mineral substances," and it featured a means of automatically rotating the drill bit between successive blows, obviating manual rotation. A patent for packing in oil-well tubes was granted on August 22 of the same year. Noe preferred using flaxseed or tallow as packing material.

Turning to more useful machinery, Noe was granted three patents for reel-related inventions from 1873 to 1876. The first was a level-wind reel with a tiny

internal fan blade that acted as an anti-backlash regulator. The second was entitled "Improvement in traverse-motions." Noe described a complex gear train that provided a rotating bobbin with level-winding capability. "The invention [was] applicable for...reels for fishing-rods..." The third invention was a simple thumb brake that put pressure on the rotating spool to prevent line overruns.

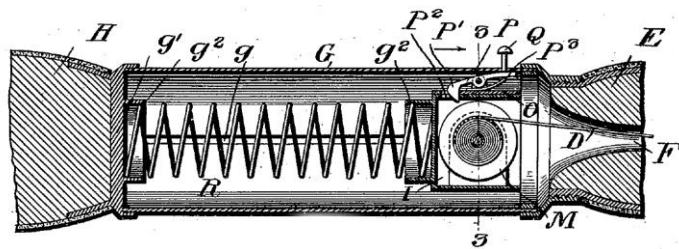


Noe's gear train, adapted for use in a fishing reel, drives the level wind.

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Another prodigal reel inventor was employed for many years by the Standard Oil refinery in Baton Rouge, Louisiana. William H. Booth was only twenty-five when he applied for a patent for a reel/rod combination that should have been sold with an instruction book. The reel was enclosed within a box-like holder within the rod, and the spool was released by pushing in the crank. Cranking reengaged the spool for reeling in line and locked it against reverse rotation. For fishing, the angler used a sleeve on the rod to pull the reel holder forward, and the holder was locked in position by a pawl. When he felt a bite, the angler hastily consulted his instruction book and pressed the button that released the reel holder. The reel holder was yanked backwards by a huge coil spring, and the hook was set because the spool was locked. The angler was free to crank in the line without further ado.

Booth was an "electrician" when he applied for his patent in 1901. Over the next decade and a half, he

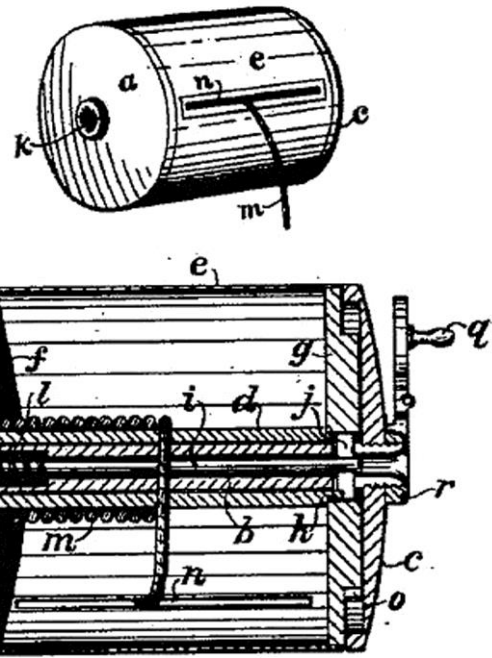


Booth's automatic striker combo. The spool-containing box is pulled forward with a sleeve on the rod. When a fish strikes, pressing button Q allows the spool to be yanked backwards by the spring, possibly setting the hook. The freespool-clutch components are not shown in this patent drawing.

worked as custodian of the state capitol and grounds, probation officer of the juvenile court, traveling salesman, and independent building contractor, before going to work as a carpenter and mechanic at Standard Oil. During the 1930s, Booth returned to running a contracting business and was appointed building inspector for the city.

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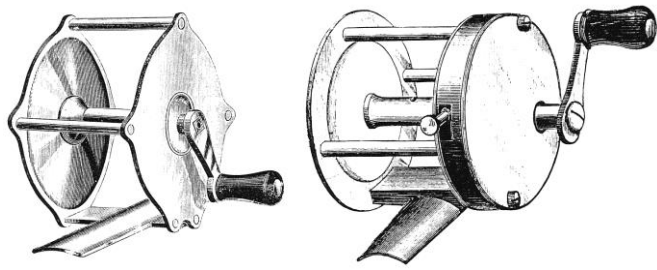
Although he had been a harness maker in his early years and had spent decades as a carpenter, Hiram A. Guild, Knoxville, Pennsylvania, was a salesman in the oil industry after the turn of the twentieth century. In 1896, he had patented a slotted, can-like device that held a spool inside, a crank, and a button that released an internal spring from locking the spool. Guild admitted that the invention was meant to improve chalk-line reels, "but [was] adapted as well to reels for fishing purposes."



Guild's reel could be used for a chalk-line or fishing line.

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A couple of men were even more completely immersed in the oil industry than those mentioned above. However, they manufactured, rather than invented, fishing reels. Charles Millard Pratt's father's company had become part of the Standard Oil Trust in 1874. Charles was active in some of his father's other companies and was a director of Standard Oil. Alfred C. Bedford would become his assistant in one of his father's companies. In 1907, Bedford was elected to the board of the Standard Oil Company of New Jersey. He would be instrumental in preventing an industry disaster when the trustbusters split the oil trust into thirty-



*Inexpensive, unmarked, normally unidentifiable reels offered by U.S. Net & Twine*

two separate companies in 1911. In 1916, Bedford became the company president. Charles, meanwhile, would serve as president of Standard Oil of Kentucky, then, sequentially, secretary, treasurer, and vice-president of Standard Oil of New Jersey.

At some point before 1890, Pratt became the president, and Bedford, the secretary, of United States Net & Twine Company, which was a major manufacturer of fishing reels and other products for anglers.<sup>5</sup> Bedford had an office at 163 Grand Avenue, Brooklyn, the location of the reel factory. Why the firm was acquired by the oil men is not known. These men remained as officers until U.S. Net & Twine was acquired about 1899 by yet another trust—the Linen Thread Company. They were then free to devote their full attention to the oil industry.

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During the last decade or two, many books have presented revisionist histories of the United States, often slaughtering some of the “sacred cows” that we were taught in school. I hope that this little article will convince amateur and professional historians alike that fishing reel inventors were responsible for the rapid growth of the American oil industry.

#### Notes

1. Not to be confused with Luther Atwood, a chemist who gained fame during the 1850s by making distillation products, including kerosene, from coal.
2. Butler, Ben & Natalie S., *The Falls, Where Farmington, Maine Began in 1776*. Farmington, Me.: Farmington Historical Society, 1976, pp.16-19
3. Davis, Taffy. Farmington’s Leonard Atwood. *Memories of Maine Magazine*, Nov., 2007, pp.24-26.
4. In most of the patents and other records, “Noe” is spelled without *l’accent aigu*, but in some sources, it is spelled “Noé.” Like the Patent Office, I prefer to ignore the accent mark.
5. Vernon, S.K. The Residue of U.S. Net & Twine. *The Reel News*, Vol. XXIX, No. 6, Nov., 2019, pp. 4-6.