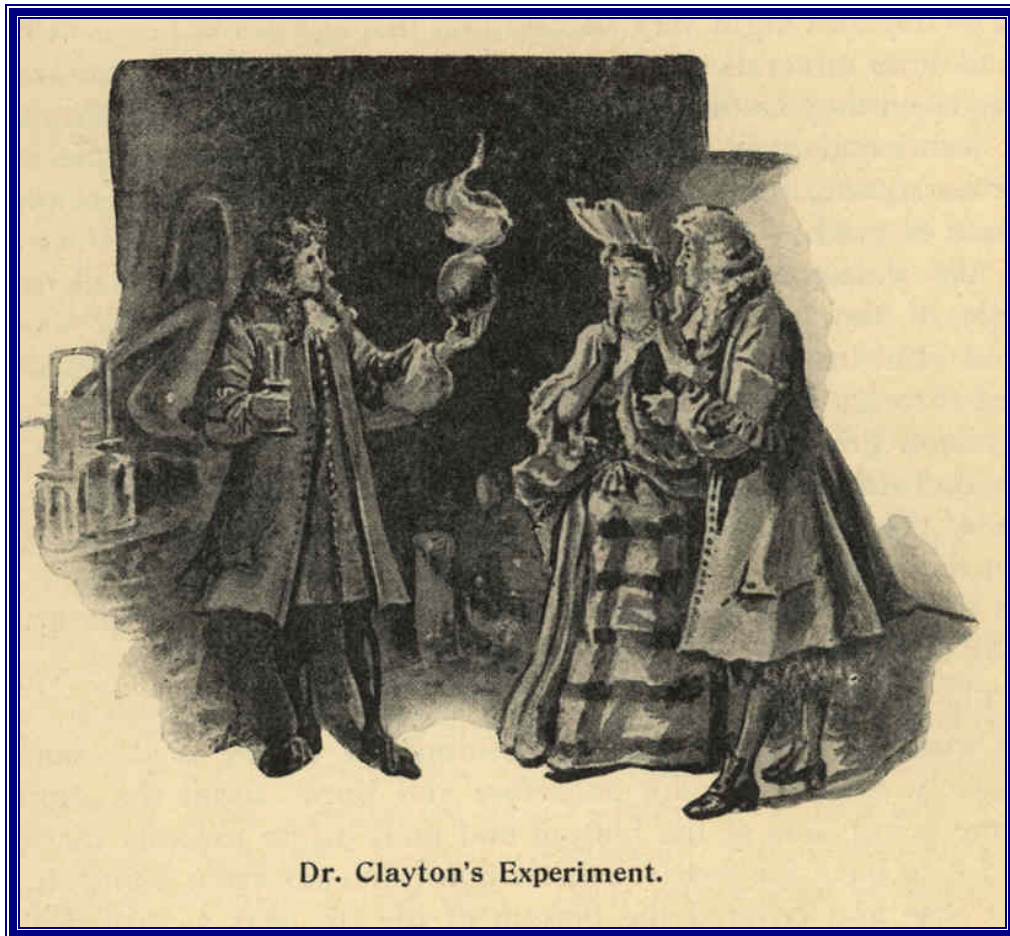




**Dr DEAN CLAYTON  
1810-1882**



Dr. Clayton's Experiment.

*Gas Pioneer*

About 1688, Dean Clayton, of Kildare, experimentally distilled coal, and the results of his observation were communicated to the Royal Society in 1739. The following is an extract from his paper: "I got some coal, and distilled it in a retort in an open fire. At first there came over only phlegm, afterwards a black oil, and then likewise a spirit arose, which I could in no ways condense; but it forced my lute, or broke my glasses. Once when it had forced my lute, coming close thereto in order to try and repair it, I observed that the spirit which issued out, caught fire at the flame of the candle, and continued burning with violence as it issued out in a stream, which I blew out and lighted again alternatively for several times. I then had a mind to try if I could save any of the spirit, for which purpose I took a turbinated receiver, and putting a candle to the pipe of the receiver, whilst the spirit arose, I observed that it caught flame, and continued burning at the end of the pipe, though you could not discern what fed the flame. I then blew it out, and lighted it again several times, after which I fixed a bladder squeezed void of air, to the pipe of the receiver. The oil and phlegm descended into the receiver, but the spirit still descending blew up the bladder. I then filled a good many bladders therewith, and might have filled an inconceivable number more, for the spirit continued to rise for several hours, and filled the bladders almost as fast as a man could have blown them with his mouth; and yet the quantity of coals distilled was inconsiderable. I kept this spirit in the bladders a considerable time, and endeavoured several ways to condense it, but in vain. And when I had in

mind to divert strangers or friends, I have frequently took one of these bladders, and pricking a hole therein with a pin, and compressing gently the bladder near the flame of a candle it once took fire, it would then continue flaming till all the spirit was compressed out of the bladder; which was the more surprising, because no one could discern any difference in the appearance between these bladders and those filled with common air. I found that this spirit must be kept in good thick bladders, as in those of an ox or the like; for if I filled calves' bladders therewith, it would lose its inflammability in twenty-four hours, although the bladders became not relaxed at all."

The products so quaintly described by Dr. Clayton resulting from the distillation of coal were much the same as those which are now obtained, but their names are different, the "phlegm" being water, the "black oil" coal tar, and the "spirit" gas. It is strange that at that time the practical application of coal gas to useful economic purposes did not occur to Dr. Clayton.

*Text & Pictures from "A History of Gas Lighting" (CIBSE Heritage Group Collection*



**SAMUEL CLEGG**  
**1810-1882**



*Pioneer of Gas Lighting*

MR. CLEGG'S OWN ACCOUNT OF HIS INVENTIONS.

*Extract from a pamphlet, published in 1820.*

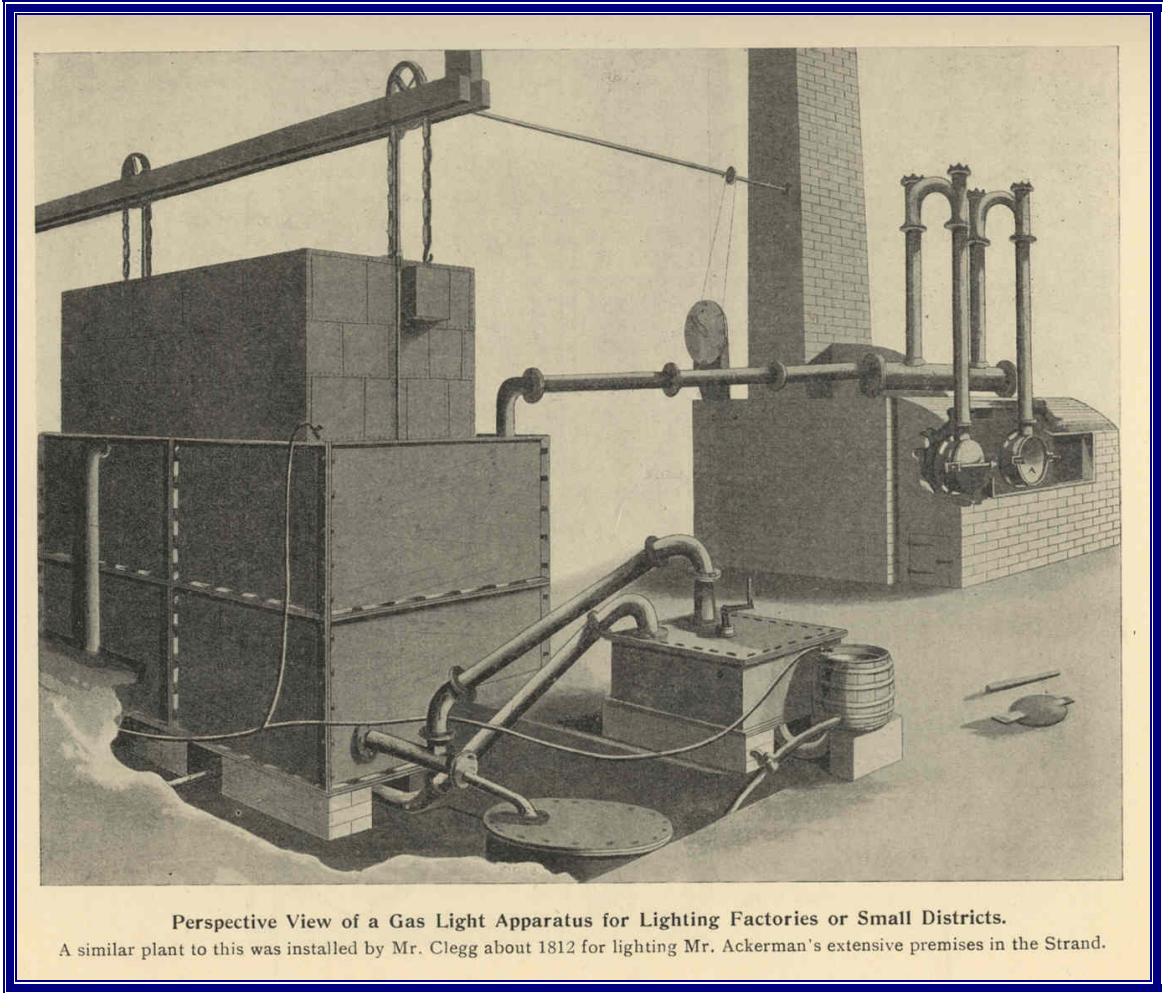
Samuel Clegg, who had been employed by Boulton and Watt, was in 1812 appointed Engineer to the Incorporated Gas Light and Coke Company at a salary of £500 per annum. Clegg was responsible for many innovations in connection with the manufacture and distribution of gas.

The following is an account of his activities and inventions which he described in a pamphlet published in 1820.

“My attention,” he wrote, “was first directed to the preparation of gas for the purposes of illumination in the year 1804. In 1805, I erected a gas apparatus at the cotton mills of Henry Lodge, Esq., near Halifax, which was the first in the kingdom. In 1806, I lighted his dwelling-house, where I first attempted to purify the gas by lime introduced into the tank in which the gasometer floated. In 1807, I lighted the manufactory of Messrs. T. and S. Knight, of Longsight, near Manchester. In 1809, I erected a gas apparatus in a large manufactory at Coventry, belonging to Mr. Harris, in which I introduced a paddle at the bottom of the tank to agitate the lime. In 1811, I lighted a large manufactory at Dolphinholme, near Lancaster, by means of an apparatus similar to what I had erected at

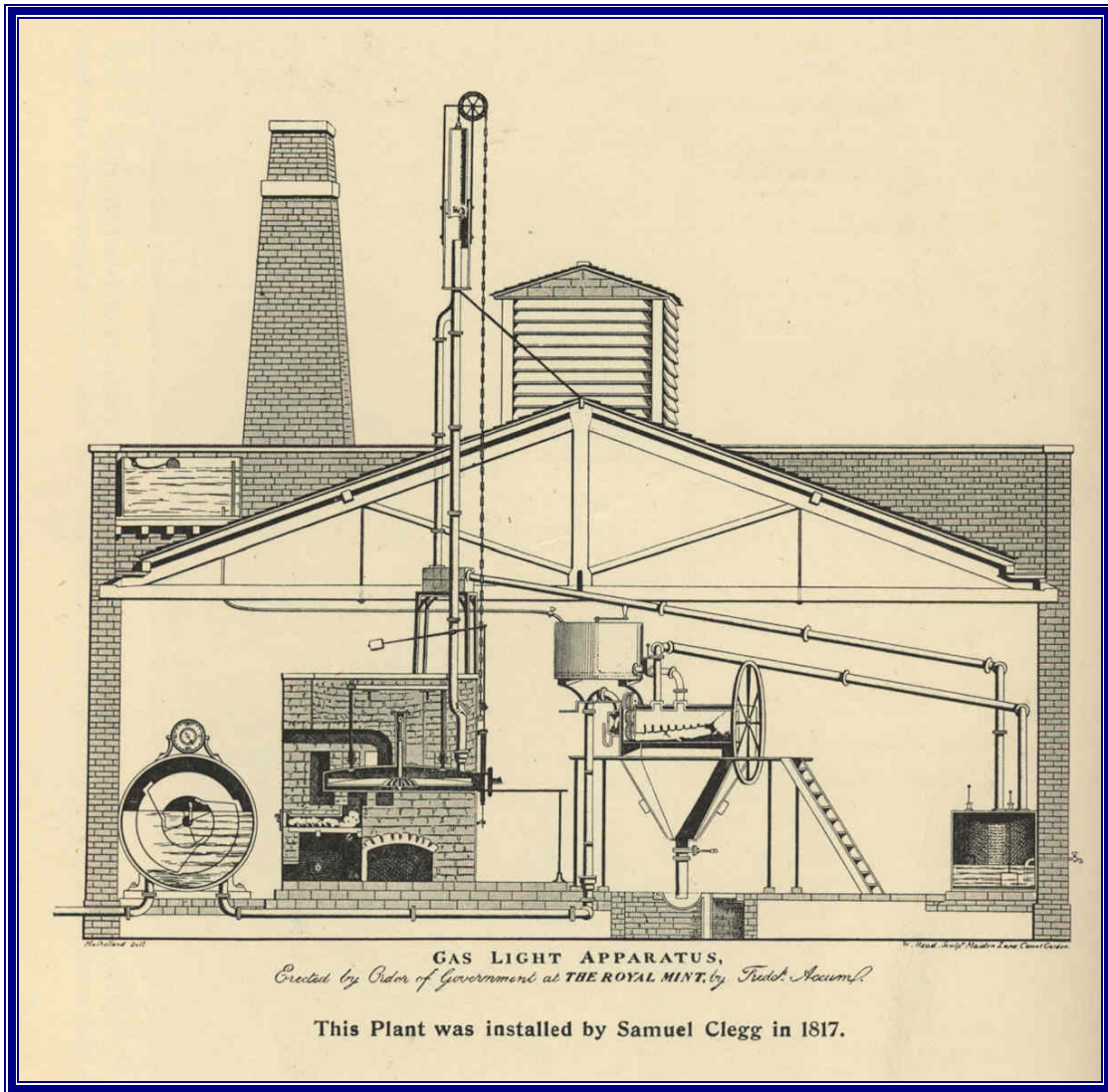
Coventry. In the same year, I erected an apparatus at Stoneyhurst College, Lancashire, where I introduced a lime machine, the first ever employed for that purpose; a machine which has been universally adopted, and which has rendered the introduction of gas practicable in any situation. In that year, also, I lighted a large cotton mill in Manchester, belonging to Mr. Greenway, where I first introduced the hydraulic pipes for insulating the retorts; a plan now in general use. In 1812, when the extensive cotton-mills belonging to Mr. Samuel Ashton and Brothers, at Hyde, near Stockport, were lighted, I introduced the lime machine and the hydraulic mains with increased effect. Here the 12-inch cylindrical retorts and improved mouth-pieces were first introduced. Here, also, I first attached to the

gasometer the mechanism for regulating its specific gravity. In the same year, I lighted the premises of Mr. Akerman, in the Strand.\* In 1813, I undertook the direction of the different works belonging to the Chartered Gas-Light Company in London and Westminster, and during the four following years lighted a great part of both these cities. In the course of that period I invented and adopted the Rotative Retorts, the semi-fluid Lime Machine, the Rotative and Reciprocating Gas Meter, the Governor or Regulator, and an Apparatus for the Decomposition of Oil, Tar, &c. In 1817, I invented the Collapsing Gas-holder. In that year, also, I erected a gas apparatus at His Majesty's Mint; and since that time I have lighted several towns, including Bristol, Birmingham, Chester, &c., &c.”



**Perspective View of a Gas Light Apparatus for Lighting Factories or Small Districts.**

A similar plant to this was installed by Mr. Clegg about 1812 for lighting Mr. Ackerman's extensive premises in the Strand.



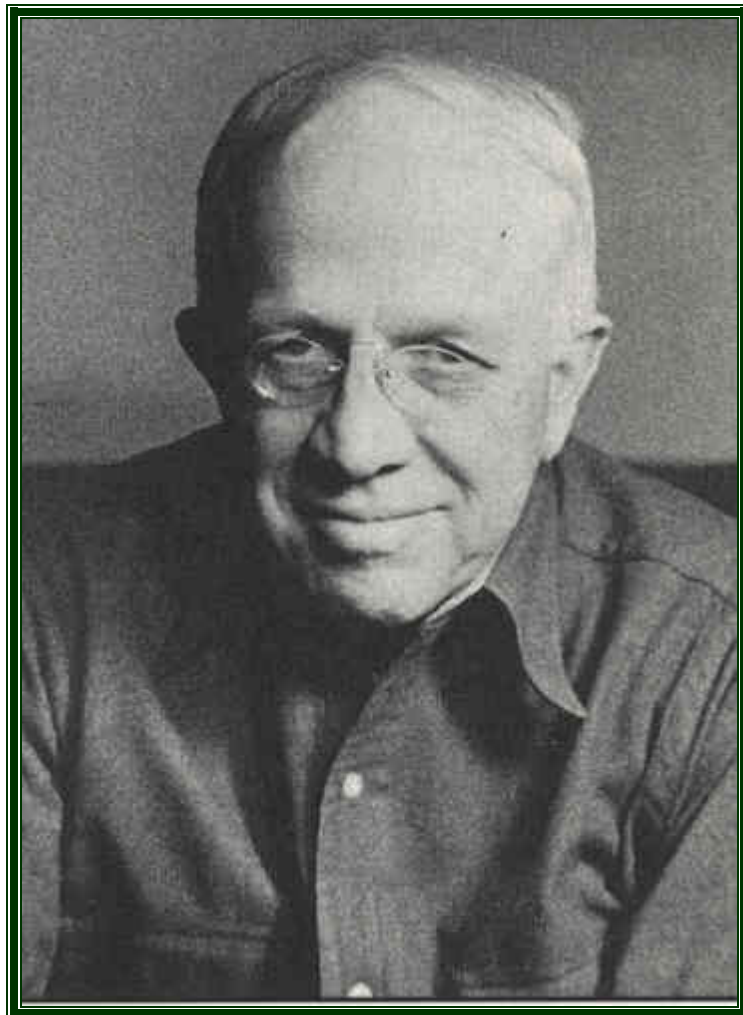
*Text & Pictures from "A History of Gas Lighting" (CIBSE Heritage Group Collection)*



*Samuel Clegg*



**HOWARD D COLMAN**  
**1873-1942**



*Co-founder of Barber-Colman*



**[132] Howard D. COLMAN**

**1873-1942**

American engineer and co-founder (with W.A. Barber) of Barber-Colman Co., controls manufacturer of Rockford, Illinois. Invented an automated knot-tying and finishing device for the textile industry (1894). With a group of engineers, he identified needs and developed further inventions, both for the textile industry and in other fields: fractional horsepower motors, electric fans, and various temperature control systems.

*(Mini-biography from "The Comfort Makers," Brian Roberts, ASHRAE, 2000)*



*The Barber-Colman Factory (1940's?)*

# **Barber-Colman**

Since 1894

*Centennial  
Celebration*



**October 23, 1994**



*a Siebe company*

## *Howard D. Colman*

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Barber-Colman Company was founded by Howard D. Colman. Mr. Colman was born in Waukesha, Wisconsin, on July 9, 1873. The son of a Methodist minister, he received his education in the schools of various towns and cities in which his father served. "One of his father's pastorates was in the town of Beaver Dam, Wisconsin, in which there was located a small cotton mill. The Colmans were neighbors to the superintendent of this mill, and it was through him the boy of about 16 or 17 made his first contact with the textile industry. This superintendent, whose name is not known, pointed out to the boy the need of a machine for drawing the warp threads into eyes of the loom harness. The boy's imagination was fired, and he immediately started to work on the idea, and built of wood a small model to illustrate the principles he had in mind."

Sometime later, Mr. W. A. Barber, a lumberman from Warrens, Wisconsin, and father of one of Mr. Colman's schoolmates, became interested in his idea and provided the resources necessary for further development. "Mr. Barber loaned him \$100.00, and in 1891, the lad, now 18-years-old, proceeded to make a better model of iron and steel."

After much more refinement, and further assistance from Mr. Barber, his warp drawing machine was tried out in a small cotton mill in Janesville, Wisconsin. "The results were sufficiently encouraging to warrant the building of a more complete machine which was eventually tested at Boott Mills...in...Massachusetts." In 1893 Mr. Colman came to Rockford, Illinois, where he had located a machine shop, the Spengler Brothers, capable of doing the class of work he had found necessary. About 1894, "he invented the check pump, a device for measuring milk, which proved very useful in the numerous creameries that dotted Wisconsin. This was the first patent issued to Mr. Colman and also the first device which gave the young company of Barber & Colman any financial returns."

On his trip to Boott Mills, Mr. Colman noted the time-consuming task to hand tie the hundreds and hundreds of yarn ends or warp threads in a sheet of cloth. It was here that "he conceived the idea of a hand knotter for spooler girls.... This little machine was amazingly successful and by July, 1901, Spengler Bros. was turning them out at the rate of 500 per month." So successful

was this device "that branch offices were opened in Boston, Massachusetts, and Manchester, England, with resident representatives in Atlanta, Georgia, Dresden, Germany, and Lille, France.... In 1900, among other projects, he started work on automatic spooling and warping devices, and during the following years many different schemes were considered and worked upon, but it was not until 1912 that the first model of the ...Barber-Colman automatic spooler was installed...." This was one of his greatest inventions.

"While he never attended an engineering school, he ranked among the first engineers in the country, and in 1935 the Franklin Institute awarded Mr. Colman the Longstreth Medal for a most outstanding contribution to the textile machinery art, as represented by the automatic spooler. He started business alone with an idea, and left behind (in 1942) an organization employing approximately 3000 men and women.... Space is too short to give a list of his inventions, but they covered many fields outside of the textile art. He was a rugged individualist, an inventive genius, a sound and conservative businessman, and a leader who by his own tireless example inspired all who came in contact with him. He set high standards of workmanship, individual performance, and business conduct. Barber-Colman Company stands as a monument to his genius and ability."



Montage to the achievements of Howard D Colman (CIBSE Heritage Group Collection)