Dr. Woodward's incandescent light.

It appears likely that Toronto saw electric light before Menlo Park, NJ, which was Thomas Edison's home base.

The topic of who invented what and when is often subjected to debate, and the following information was made available to *CEE* by Grant E. Davidson. Mr. Davidson took exception to our not giving any credit to a Canadian invention when we named the alleged inventors of the carbon filament lamp in a recent Trivia Quiz.

Here then, is the story which, if you consider the details, seems to have happened over and over again. Dr. Henry Woodward, having patented an electric lamp, saw his seed funds withdrawn by his Canadian sponsors through lack of confidence in their man's products. And who reaped the rewards? . . . why, the good old US, of course!

We reprint here parts of a February 1900 Canadian Electrical News and Engineering Journal article concerning Canadian patent 3738 and US patent 181613 subsequently obtained by Dr. Henry Woodward on August 29, 1876. Having been filed January 4, 1875, it precedes both Edison and Swan.

"The first incandescent lamp was constructed at Morrison's Brass Foundry, Adelaide St., West,Toronto, and was a very crude affair. It consisted of a water gauge glass with a piece of carbon filled by hand and drilled at each end for the electrodes and hermetically sealed at both ends, having a petcock at one end with a brass tube to exhaust the air. Woodward made the mistake of filling the tube or globe of this lamp with nitrogen after having exhausted the air.

"Six of these primary lamps were made up and connected in series. Evans *(Woodward's partner)* was accustomed to tell of the excitement which attended the watching of these lamps coming to incandescence.

"Evans was also accustomed to express the opinion that the inventor never gets the reward of his labor, and that by right he should have been the man to reap the benefit of this invention, in the perfecting of which he had expended $20,000.

"As the result of his experiments, Woodward decided that a much stronger battery would be required to obtain the desired effect, and in company with Evans he went to New York City to see what they could obtain in the shape of a stronger machine. Finding that such a machine could not be obtained in New York, Woodward was dispatched to Paris to obtain, if possible, from M. Gramme a machine that would do the work. He was absent four months and succeeded in purchasing a machine from Gramme which he shipped to Toronto by sailing vessel. The arrival in Toronto of this machine gave rise to much excitement among the electrical fraternity of that day. The machine stood about four feet high and cost £500.

"The machine was first tested on the premises of a hardware company on King St., West, near the Gurney Foundry Company's premises. Permission was obtained to couple the machine on to a line shaft which was propelled by a 60 h.p. engine, but on attaching a single light to the dynamo the engine was immediately shut down or the belts thrown off. Finally the machine was made to run successfully a single arc lamp which, as above stated, was of very crude construction and was controlled by hand feed. The machine was supposed to have a capacity sufficient to operate 50 incandescent lights. The single lamp, backed by a reflector, gave out such a strong light that Evans declared that the street car horses stopped opposite the building in which it was, while people from the surrounding neighborhood ran over to the factory, thinking it was on fire. The machine, however, would never run more than one light at a time. This first arc lamp was invented by Woodward also, and is said to have been manufactured by a machinist named Nesbit. Woodward and Evans were the subject of much public ridicule, being frequently called "cranks." After the invention had been thus far tested, outside capital was obtained, and a company formed for the supply of incandescent and electric lights to the city and private individuals. It is interesting to note from Mr. Sutherland's letter that some of the original stockholders put money into the enterprise before having ever seen the light, and that when they declined to put up more money on the same conditions, Woodward became much displeased and left for Europe."

"Figure 1 is an elevation or front view of a piece of carbon, and is marked B. It is supposed to be scraped and shaped until suitable for the required purpose.

"Figure 2 is also an elevation or front view of a piece of carbon with the electrodes E.E. attached thereto leading to and from the positive and negative poles of the battery, one being attached at the top and the other at the bottom of the carbon.

"Fig. 3 is a sectional elevation, showing a globe marked A, but which may be a vessel of any other suitable form. The prepared carbon, B, is also shown therein with the aforesaid electrodes E.E. attached thereto; showing also a tube C, with an air-tight stopclock, to be used in exhausting the air from the globe A, and for the injection of rarefied gas into the same; showing, also, the hermetical sealing of said vessel at the ends G.G. of the tubes, and showing also the stand D.

"Fig. 4 is a sectional elevation, showing the adaptation of another form of vessel, A. This drawing is on a larger scale, in order to show the manner of closing the ends of the vessel which is done by brass sockets; that at the top being marked K, and that at the bottom being marked L; showing also a carbon B, different in form from that in the other vessel, and having the two electrodes E.E. running to and from the poles N and M.

"Fig. 5 is an elevation, showing one mode of connecting the various lights with the machine by means of two trunk wires or electrodes 11.11 running from the positive and negative poles M and N of the machine, with branches b, b, & c., therefrom, to each light.

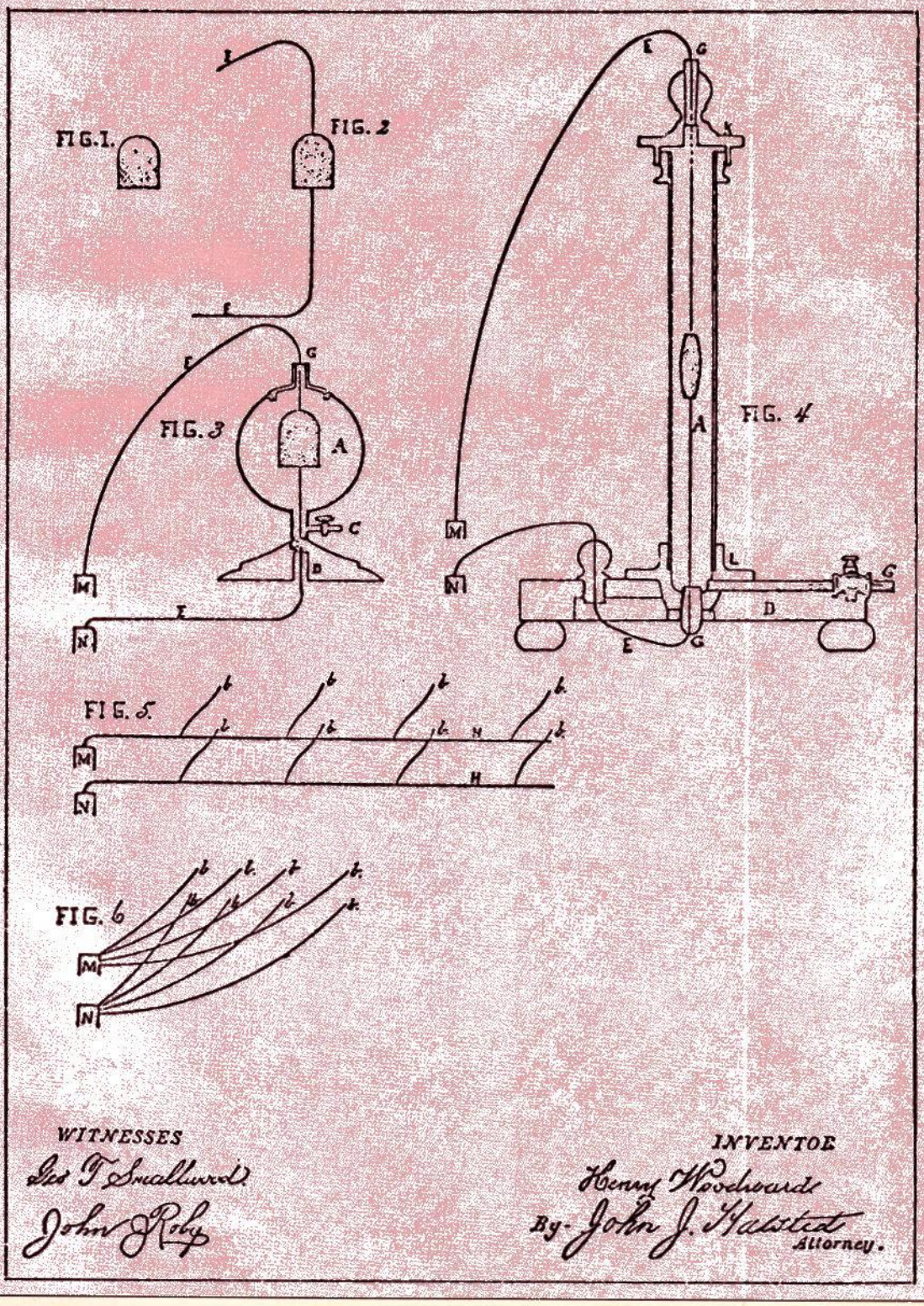
"Fig. 6 is also an elevation, showing another method of connecting the lights with the machine, each light having a distinct wire 5, running to each pole M N of the machine or battery. Having thus described my invention, I claim—A carbon B, in combination with a lamp or other suitable vessel. A, filled with rarefied gas, possessing the property of not chemically combined with the carbon when in a state of incandescence, in connection with the described arrangement and mode of connection of the electrodes F.E. with the carbon, all as shown and set forth."

Henry Woodward CEE

H. WOODWARD.

ELECTRIC LIGHT.

No. 181,613 Patented Aug. 29, 1876.



WITNESSES

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