

PATENT.

No. 245011

William Alexander
Felix Bleek

NOTE.—The continuance of this Patent is conditional on the payment (by way of the prescribed Patents Form No. 14) of the following fees:—

Before the expiration of the 4th year from the date of the patent and in respect of the 5th year	£	s.	d.
" " " " 5th	6	0	0
" " " " 6th	7	0	0
" " " " 7th	8	0	0
" " " " 8th	9	0	0
" " " " 9th	10	0	0
" " " " 10th	11	0	0
" " " " 11th	12	0	0
" " " " 12th	13	0	0
" " " " 13th	14	0	0
" " " " 14th	15	0	0
" " " " 15th	16	0	0

One moiety only of these fees is payable if, and so long as, this Patent is indorsed "Licences of Right."

As the payment of these renewal fees is regulated by Act of Parliament, a fee cannot be received a *single day* after it is due; but if the payment has been omitted, application may be made to the Comptroller, on Patents Form No. 15, for an enlargement of time to make such payment, and for this enlargement the fees payable are £2 for one month, £4 for two months, or £6 for three months, but no enlargement can be allowed beyond three months.

* Patents Forms Nos. 14 and 15 may be purchased on personal application at the Inland Revenue Office (Room No. 25), Patent Office, 25, Southampton Buildings, London, W.C.2, or can be obtained at a few days' notice through any Money Order Office in Great Britain and Northern Ireland upon prepayment of the value of the Stamp.

[M3470] 9473/636 3000 8/26 2055 G & S-118 6



PATENT.

GEORGE V,



BY THE GRACE OF GOD,

Of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas King, Defender of the Faith, Emperor of India: To all to whom these presents shall come greeting:

WHEREAS *William Alexander Felix Bleek, of 'Hillcrest', Dudley Street, Annerley, South Brisbane, in the State of Queensland Commonwealth of Australia, British Subject*

hath declared that he has made an application abroad for protection of his invention of *Improvements in primary batteries*

and that the said invention was not in use within the United Kingdom of Great Britain and Ireland and the Isle of Man by any other person before the date hereunder written of these presents to the best of his knowledge and belief:

AND WHEREAS the said applicant hath humbly prayed that a patent might be granted unto him in priority to other applicants for the sole use and advantage of his said invention:

AND WHEREAS the said applicant (herein-after together with his executors, administrators, and assigns, or any of them, referred to as the said patentee) hath by and in his complete specification particularly described the nature of his invention:

AND WHEREAS We, being willing to encourage all inventions which may be for the public good, are graciously pleased to condescend to his request:

KNOW YE, THEREFORE, that We, of our especial grace, certain knowledge, and mere motion do by these presents, for us, our heirs and successors, give and grant unto the said patentee our especial license, full power, sole privilege, and authority, that the said patentee by himself, his agents, or licensees, and no others, may at all times hereafter during the term of years herein mentioned, make, use, exercise, and vend the said invention within our United Kingdom of Great Britain and ^{Queensland} Ireland, and ^{the} Isle of Man, in such manner as to him or them

may seem meet, and that the said patentee shall have and enjoy the whole profit and advantage from time to time accruing by reason of the said invention, during the term of sixteen years from the date hereunder written of these presents: AND to the end that the said patentee may have and enjoy the sole use and exercise and the full benefit of the said invention, We do by these presents for us, our heirs and successors, strictly command all our subjects whatsoever within our United Kingdom of Great Britain and ~~the~~ Ireland, and the Isle of Man, that they do not at any time during the continuance of the said term of sixteen years either directly or indirectly make use of or put in practice the said invention or any part of the same, nor in anywise imitate the same, nor make or cause to be made any addition thereto or subtraction therefrom, whereby to pretend themselves the inventors thereof, without the consent license or agreement of the said patentee in writing under his hand and seal, on pain of incurring such penalties as may be justly inflicted on such offenders for their contempt of this our Royal command, and of being answerable to the patentee according to law for his damages thereby occasioned:

PROVIDED ALWAYS that these letters patent shall be revocable on any of the grounds from time to time by law prescribed as grounds for revoking letters patent granted by Us, and the same may be revoked and made void accordingly: PROVIDED ALSO, that if the said patentee shall not pay all fees by law required to be paid in respect of the grant of these letters patent, or in respect of any matter relating thereto at the time or times, and in manner for the time being by law provided; and also if the said patentee shall not supply or cause to be supplied, for our service all such articles of the said invention as may be required by the officers or commissioners administering any department of our service in such manner, at such times, and at and upon such reasonable prices and terms as shall be settled in manner for the time being by law provided, then, and in any of the said cases, these our letters patent, and all privileges and advantages whatever hereby granted shall determine and become void notwithstanding anything hereinbefore contained: PROVIDED ALSO, that nothing herein contained shall prevent the granting of licenses in such manner and for such considerations as they may by law be granted: AND lastly, we do by these presents for us, our heirs and successors, grant unto the said patentee that these our letters patent shall be construed in the most beneficial sense for the advantage of the said patentee.

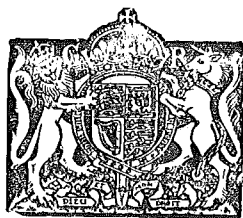
IN WITNESS whereof we have caused these our letters to be made patent and to be sealed as of the *twenty third* day of *February* one thousand nine hundred and *twenty five*

W. S. JARRATT,

*Comptroller-General of Patents,
Designs, and Trade Marks.*



PATENT SPECIFICATION



Convention Date (Australia): Feb. 23, 1925.

248,011

Application Date (In United Kingdom): Feb. 23, 1926. No. 5184/26.

Complete Accepted: Aug. 23, 1927.

COMPLETE SPECIFICATION.

Improvements in Primary Batteries.

I, WILLIAM ALEXANDER FELIX BLEECK, of "Hillcrest", Dudley Street, Annerley, South Brisbane, in the State of Queensland, Commonwealth of Australia, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to primary batteries of the type described in my British Patent Specifications No. 5297/08 and No. 15,194/09, wherein are described primary batteries which give an exceptionally high electro-motive force with a low internal resistance, and which possess a remarkable constancy that enables them to be employed with advantage in many cases where the ordinary primary batteries are unsuitable. The object of this invention is the production of a primary battery not only embodying these important features but in which the hitherto uncontrollable and detrimental diffusion of the excitant through the porous pot into the depolariser is retarded and the electrical efficiency and ampere hour capacity of the battery is greatly increased under all loads. This factor also considerably lengthens its life and usefulness when the battery is used for intermittent working over an extended period. The improved battery is particularly useful for wireless sending and receiving sets, sparking on motor cars and boats, driving small voltage electric motors, electric lighting, and in other instances where it is desired to obtain a high efficiency at short notice and without having to send the battery, as in the case of secondary batteries, to charging stations.

The invention consists in adding sodium silicate to the electrolyte of a battery of the double fluid type compris-

ing zinc in a solution of sodium hydroxide as electrolyte, and carbon in a depolarizer consisting of a solution containing chromic acid, hydrochloric acid, iron or nickel sulphate or a mixture of the two sulphates.

It has been proposed in a cell of the double fluid type to add a small quantity of sodium silicate to the exciting fluid to prevent the mutual diffusion of the fluids through the porous pot.

Further it has been proposed in a zinc-carbon cell of the double fluid type using caustic soda or potash as the electrolyte, to render the electrolytes easily transportable by forming them into a jelly like mass by means of silicate of soda or potash or both.

In carrying out my invention I use the same elements as described and claimed in Patent Specification Number 5297/08 hereinbefore referred to, namely, a perforated rectangular or cylindrical carbon element placed in the depolariser contained in an outer containing vessel made of glass, celluloid, or other suitable material, and zinc element, preferably in the form of a perforated cleft rectangular or cylindrical tube (although I do not wish to bind myself to any particular form or shape of such element) placed in the excitant, which is contained in a porous pot within the carbon element.

The depolariser, which is the same as described and claimed in Patent Specification Number 15,194/09, to which reference has been made, consists of the following ingredients mixed in approximately the following proportions:—

Chromic acid—eight (8) ounces.
Water—fifteen (15) ounces.
Hydrochloric acid—five (5) ounces.
Ferrous sulphate or nickel sulphate or a mixture of the two—one (1) ounce.

The commercial hydrochloric acid is mixed with the water and, in this mix-

[Price 1/-]

ture, the ferrous sulphate or nickel sulphate or a mixture of ferrous and nickel sulphate in any proportion is dissolved, and then commercial chromic acid is subsequently added to the solution.

The excitant consists of a solution of sodium hydroxide formed of approximately eight (8) ounces of sodium hydroxide dissolved in approximately sixteen (16) ounces of water, as included in my Patent Specification Number 5297/08, but, instead of adding gum arabic, as in Patent Specification Number 15,194/09, for retarding the diffusion of the excitant, I add approximately two (2) fluid ounces of sodium silicate. The sodium silicate is used as a colloidal substance in solution, which not only retards the diffusion of the excitant but thereby greatly improves the electrical efficiency of the battery. The cell or battery may be fully charged within two minutes and is then immediately ready for use, recording the exceptionally high electromotive force of 2.6 to 2.7 volts per single cell.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is

to be performed, I declare that what I claim is:—

1. In a primary battery of the double fluid type comprising zinc in a solution of sodium hydroxide as electrolyte and carbon in a depolariser consisting of a solution containing chromic acid, hydrochloric acid, iron or nickel sulphate or a mixture of the two sulphates, the addition of sodium silicate to the electrolyte as and for the purposes set forth.

2. In a primary battery of the double fluid type having carbon as the negative element in a depolariser consisting of a mixture substantially in the proportions mentioned of chromic acid, water, and hydrochloric acid, together with ferrous or nickel sulphate or a mixture thereof, and zinc as the positive element in an excitant consisting of a mixture substantially in the proportions set forth of sodium hydroxide and water, the addition to the excitant of sodium silicate in the proportions specified as and for the purposes set forth.

Dated this 12th day of February, 1926.

MARKS & CLERK.