

Specification of James Darsie Morrison : dentistry.

Contributors

Morrison, James Darsie.

Publication/Creation

London : Great Seal Patent Office, 1865 (London : George E. Eyre and William Spottiswoode)

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A.D. 1864, 29th DECEMBER. N° 3229.

SPECIFICATION

OF

JAMES DARSIE MORRISON.

—
DENTISTRY.
—

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,

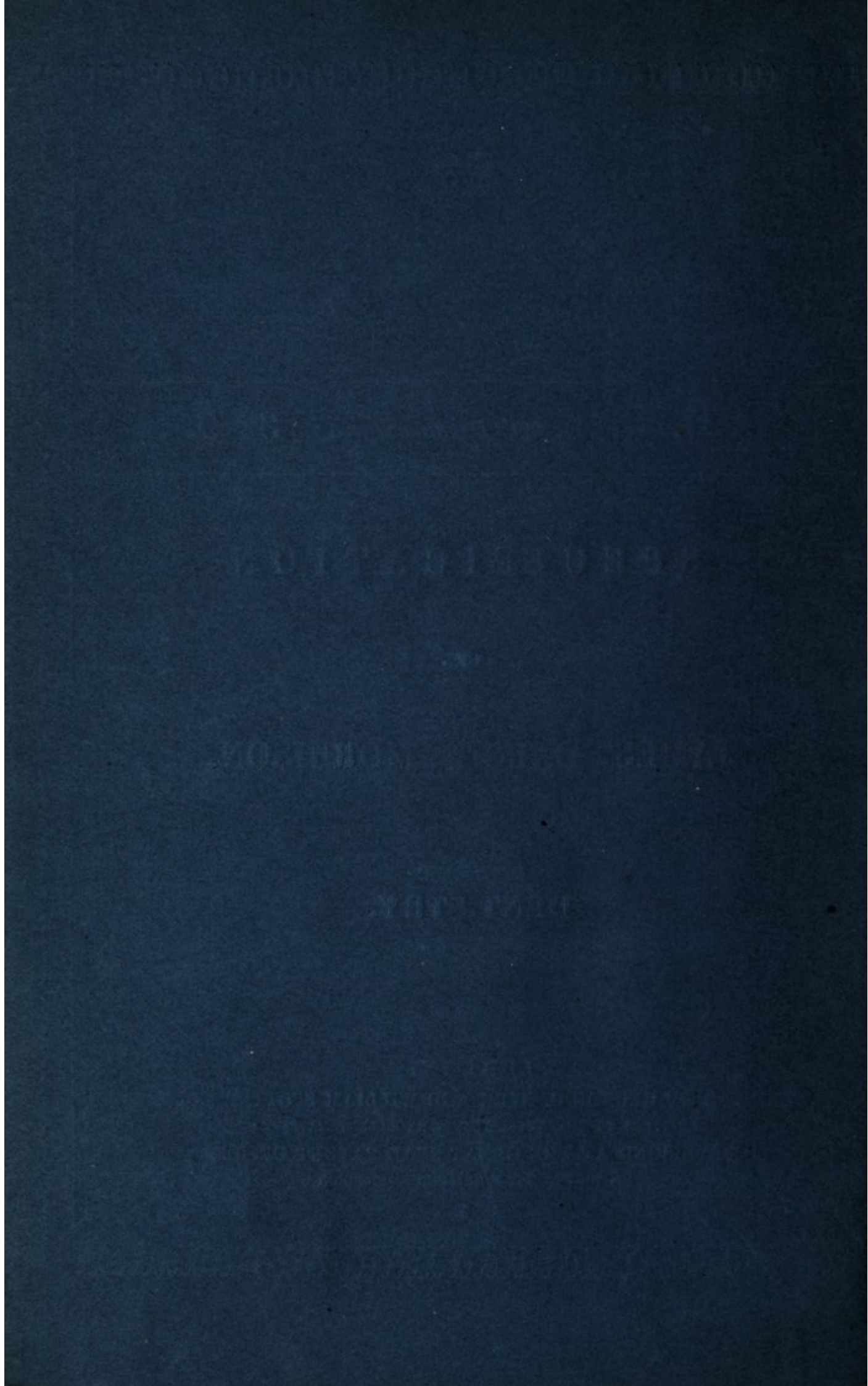
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

25, SOUTHAMPTON BUILDINGS, HOLBORN.

Price 6d.

1865.





A.D. 1864, 29th DECEMBER. N° 3229.

Dentistry.

LETTERS PATENT to James Darsie Morrison, of No. 8, Wemyss Place, Edinburgh, in the County of Mid Lothian, North Britain, Dentist, for the Invention of "**IMPROVEMENTS IN PAINLESS DENTISTRY BY APPARATUS FOR COOLING AND TEMPERING AIR, AND APPLYING IT AS AN ANÆSTHETIC AGENT.**"

Sealed the 16th June 1865, and dated the 29th December 1864.

PROVISIONAL SPECIFICATION left by the said James Darsie Morrison at the Office of the Commissioners of Patents, with his Petition, on the 29th December 1864.

I, JAMES DARSIE MORRISON, of No. 8, Wemyss Place, Edinburgh, in the
5 County of Mid Lothian, North Britain, Dentist, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN PAINLESS DENTISTRY BY APPARATUS FOR COOLING AND TEMPERING AIR AND APPLYING IT AS AN ANÆSTHETIC AGENT,**" to be as follows:—

This Invention relates to the double cooling of atmospheric air through
10 external mediums, and through the self-exhausting principle, by which the air in performing the very work required of it, consumes its remnant heat, as applied in a tempered and continuous current, as a local anoesthetic agent, for the purpose of rendering the nerves of the gums and teeth insensible, so as to enable the dentist to perform as painlessly as possible his various operations.

Morrison's Improvements in Painless Dentistry.

In carrying out this application, the Inventor makes use of a powerful double-acting air pump placed between and attached to two separate series of small strong coiled seamless copper tubes.

This pump is so constructed, that whilst with one half it empties the supply series of tubes, with the other half it transfers and compresses the air into the 5 reservoir series of tubes. These tubes are small that the air within them may be in a state of extreme division; strong, that this divided air may be highly compressed; and long, that they may be coiled, so that this divided and compressed air may pass slowly through them, in order that these copper tubes acting as heat conductors may have time to extract the heat from the 10 air within, and transfer it to the ice or water without, in which the whole apparatus is embedded. A branch coil from the reservoir series after being heated with hot water, rejoins the main current in a double screw stop valve cock, to which is attached a strong flexible tube for the conveyance of either currents of air to the instrument operated with, and through which these 15 currents are applied directly to the gums.

These instruments may be of any kind, as forceps, knives, saws, but only constructed with channels for the conveyance and application of the prepared air.

The peculiarity claimed for this Invention as applied to these instruments 20 is, that they individually do the entire work to be done, that is, they not only, through the hands of the operator, simultaneously apply the anæsthetic agent, and perform the surgical or mechanical work required, but gradually and under the complete control of the operator reduce the temperature of the gums from blood heat to a state of insensibility for the operation; and after 25 the operation is performed, gradually restore the gums again to the natural temperature.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said James Darsie Morrison in the Great Seal Patent Office on the 29th June 1865. 30

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JAMES DARSIE MORRISON, of No. 8, Wemyss Place, Edinburgh, in the County of Mid Lothian, North Britain, Dentist, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-ninth day of December, in the year of our 35 Lord One thousand eight hundred and sixty-four, in the twenty-eighth year of Her reign, did, for Herself, Her heirs and successors, give and grant

Morrison's Improvements in Painless Dentistry.

unto me, the said James Darsie Morrison, Her special licence that I, the said James Darsie Morrison, my executors, administrators, and assigns, or such others as I, the said James Darsie Morrison, my executors, administrators, and assigns, should at any time agree with, and no others, 5 from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN PAINLESS DENTISTRY BY APPARATUS FOR COOLING AND TEMPERING AIR, AND APPLYING IT AS AN ANÆSTHETIC 10 AGENT," upon the condition (amongst others) that I, the said James Darsie Morrison, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent 15 Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said James Darsie Morrison, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the 20 following statement and accompanying Drawings, that is to say:—

The correlation of physical forces teaching the convertibility of one form of force into that of another, of the generation of heat in air by pressure and friction, and of the consumption of heat in air by making it do mechanical work. This Invention by giving effect to this law may be said to convert the 25 slow heat-conducting power of air into a fast heat-abstracting agent, and by applying this principle to the gum abstracts therefrom its heat, thereby rendering it insensible to dental operations.

To concentrate in one instrument the power to continuously blow on both sides of the gum air warmed to blood heat, then to gradually lower the 30 temperature to any degree of cold required to render the gum insensible, to be always ready to instantly and as painlessly as possible extract any tooth or stump the moment the gum is blanched or benumbed to continue the air blast throughout the entire operation, and when over to gradually restore the benumbed part to itself again has been the object of this Invention.

35 And in order that my Invention may be properly understood, I shall now proceed to describe the several parts and illustrated Figures upon the explanatory Sheet of Drawings.

The apparatus required to confer on one instrument so many varied powers of action consists of ten principal parts, namely, a pump, supply tubes, reservoir

Morrison's Improvements in Painless Dentistry.

tubes, pressure gauge, cistern, hot air apparatus, double screw stop valve cock, thermometer, flexible tube, and forceps.

The pump, which ought to be powerful enough to get up and keep up 12 atmospheres of pressure, is an ordinary well made gun metal double-acting air pump worked to between 1 and 6 atmospheres, according to the pressure 5 of cold wanted. It is placed vertically in the centre of any kind of very strong circular vessel, of 3 feet diameter, and of sufficient weight to contain not only the pump but all the coils of tubes and fittings hereafter to be described. To the bottom of this strong vessel the entire pump is to be strongly secured against any possible movement by strong water-tight bolts. 10

The supply tubes are seamless, made of copper, 200 in number, each 40 feet long, $\frac{1}{16}$ th of an inch inside diameter, and $\frac{1}{8}$ th of an inch outside diameter. All the one ends of this bundle are gathered into one tube, which divides to supply the two suction parts of the pump; all the other ends are gathered together into a gun metal receiving box, so made that there will be 15 200 holes in it to receive the 200 tubes, and at the same time allow all their mouths to be open to admit the air, which is to fill the two tubes leading to the pump.

The reservoir tubes, also seamless, and made of copper, 112 in number, and divided into large and small, 12 each, 20 feet long, $\frac{1}{2}$ an inch inside diameter, 20 and $\frac{3}{4}$ of an inch outside diameter; 100 each, 40 feet long, $\frac{1}{16}$ th of an inch inside diameter, and $\frac{3}{16}$ ths outside diameter. All the one ends of each bundle are gathered together into one entrance and one exit. The one end of the bundle of large tubes is coupled to the one end of the bundle of small tubes so as to form a clear passage from one bundle into the other; the other end of 25 the bundle of large tubes divides into two to supply the two compressing parts of the pump, the other end of the bundle of small tubes lead into a tube, which occupies the one half of an ordinary double-screw stop valve cock. From the pump end of the bundle of large tubes two branch tubes are taken, one to supply a pressure guage within sight of the operator, the other long 30 enough to form a coil to be placed within any convenient hot water apparatus to rejoin the main current, and to occupy the other half of the double-screw stop valve cock. To the valve cock is attached one end of a strong flexible tube, having fitted to it a thermometer ranging from above blood heat to below freezing; the other end of the flexible tube is attached to a tube so 35 made that a right-angled slit in it allows the forceps to be fastened to it just as a bayonet is fastened to a gun.

Fig. 1 represents the straight pair of blow pipe forceps intended for operations principally of the upper jaw, the action precisely the same, as fully

Morrison's Improvements in Painless Dentistry.

described in Fig. 2, showing the flexible tube connection going within the forceps.

Fig. 2 is a full-sized Drawing of a section of the bent blow pipe forceps intended for operations on the under jaw. B is the drilled part or channelled
5 half of said instrument, showing throughout its entire length the drilled channel A, through which the tempered air from the flexible tube *f* passes along continuously into and through the two-way cock, Fig. 3, which occupies the hole in the centre of the joint, and into and through the black colored bits *a, a*, to the gum of the patient. The parts colored blue represent the solid steel
10 parts of which the entire instrument is made; *b, b*, are the drilled sockets of the forceps, into which the colored bits *a, a*, are fitted; *c, c*, are the wedges which fix them there; *e* is the tube which connects by a bayonet joint the drilled limb B to the flexible tube *f*. The marginal darkish colored narrow edge bordering which encloses the blue colored steel of the instrument shows
15 the thickness of the non-conducting vulcanite covering of the handles, the object of which is to prevent the conduction of heat from the hand of the operator to the passing cold air within, or of cold from the passing air within to the hand of the operator without.

Fig. 3 shows the two-way cock, having one entrance into it through the
20 drilled limb B, Fig. 2, and two ways out of it to the bits *a, a*, of Fig. 2, and which forms the pin of the centre of the round joint in the forceps; in ordinary forceps this would be a mere screw nail holding the two limbs together like a pair of scissors; this two-way open cock I deem an important feature of my Invention. Suppose this piece halved, as shewn by Fig. 3, the parts which
25 move on each other and where the air would escape are ground like an ordinary stop-cock, and the same at the ends; the parts where the little holes are situated are where the holes in the bolt or way cock, as I call it, meet the channel of the drilled holes both of the forceps and the bits, and so continues the passage of the air. The bits painted black are first drilled while the steel
30 is in a straight rod half the capacity of the $\frac{1}{8}$ th of an inch channel, which is drilled through the solid lower limb B. This instrument is intended by means of its several shaped and adapted bits, points, or pieces to do all the tooth and stump extracting work of the upper jaw, and also the back part of the under jaw; a separate Drawing of the bits is not given, as every dentist has his own
35 shape in the ordinary forceps. I wish it to be understood that although for the sake of shewing the wedge it is put in the side of the bit, I prefer the wedge in the centre with a hole through it to pass on and continue the current; the entire instrument could be made without the bits being movable, but made in one piece like the ordinary forceps. There is more to drill in the

Morrison's Improvements in Painless Dentistry.

extra length of course, but being drilled straight the thing of course can be done, the bending taking place afterwards.

In case that any part my Invention may not be quite plain, it will be necessary for me to more particularly here, describe how the tubes are put together, what the purpose and reason of so many instead of one. This will 5 best be done by selecting for illustration the 12 reservoir tubes. These tubes serve three purposes :—Firstly, they act as a reservoir to hold the compressed air ; secondly, to keep up a continuous pressure of compressed air onwards and into the 100 small tubes beyond them leading to the operator ; thirdly, to rapidly cool the compressed air. One large tube would perfectly answer the 10 first and second purpose, but not the third, the reason is simply this, that air is an exceedingly bad conductor of heat, and can only be cooled by being thinned out either into a thin sheet or divided into small portions. Engineers and jewellers talk of drawing a mass of metal into wire, practically I do the same thing with a mass of air, my mass is the atmosphere which I draw into 15 threads, or, if allowed the expression, into air wires, 200 in number, each 40 feet long and $\frac{1}{8}$ th of an inch diameter, and the tool I use for the purpose is the 200 40 feet long supply pipes attached to the drawing parts of my pump. I also press the air into 12 rods, each 20 feet long and $\frac{1}{2}$ an inch diameter ; also into 100 air wires, each 40 feet long and $\frac{1}{8}$ th of an inch diameter ; and the 20 moulds I use are the 12 large and 100 small reservoir tubes attached to the compressing parts of my pump. This must be so plain to the mind of a mechanical engineer, that I need not say more than remark that each end of each tube is so fitted into a corresponding hole, into any convenient box or coupling as shall serve to gather the entire contents of each bundle of tubes 25 into one tube only, so as to continue the passage of the air into the corresponding one tube of the next bundle, the whole Invention may be considered as practically one tube leading the atmosphere into the pump and another leading it out again into the patient's mouth. The divisions and subdivisions for cooling purposes not in any way interfering with the free passage of air 30 within the connected succession of tubes, the joints of which may be considered as so many inoculations which pass the air from one tube to another.

The apparatus thus described as far as putting it together, nothing now remains but to properly secure the pump to the bottom of the cistern, and coil round it at the distance of the inside diameter of the vessels the supply and 35 reservoir tubes. The neck of the stuffing box requires to be produced beyond the top of the cistern so as that when the cistern is filled with water, ice, ice and salt, or other cooling mixture none shall get into the pump.

The trunk and two branches of tubes, stop-cock, guage, thermometer,

Morrison's Improvements in Painless Dentistry.

flexible tube and forceps, are of course fitted up in the operating chair or other suitable piece of furniture, and all the rest of the apparatus out of the sight of the patient, and worked in another room.

The manner of using the forceps is first to select such forceps or forceps
5 points as will exactly suit the tooth or stump to be extracted, then turning on or off the hot or cold air stop-cocks, so as to allow either hot or cold air to enter the flexible tube till the thermometer stands at blood heat, then placing the forceps points over the tooth to be extracted, but not touching it, gradually increase the cold till the gum is blanched, when the forceps points are to be
10 closed on the tooth, which is extracted with little or no pain to the patient; the air by an arrangement in the points, still blowing on the gum, will be sufficiently near the jaw to blow warmer and warmer air till the gum is restored to the natural state.

Having now particularly described my Invention, and the manner in which
15 the same is to be carried out, I do not confine or restrict myself to any particular or precise details or arrangements which I have had occasion to describe or refer to, as many variations may be made therefrom without deviating from the principal or main features of my Invention, but what I consider to be novel and original, and therefore claim as the Invention secured
20 to me by the herein-before in part recited Letters Patent is, the improvements in painless dentistry by apparatus for cooling and tempering air, and applying it as an anæsthetic agent by means of the forceps, or other instrument used bringing the tooth or gums into the anæsthetic condition by reducing them by a nice but rapid graduation from blood heat to insensibility, and after the
25 dental operation, by a like graduation restoring them from insensibility to blood heat, and which instrument besides being the anæsthetic channel, is itself continuously and immediately the very instrument for extracting the tooth, thus combining in one instrument the action of a continuous double blow pipe, for anæsthetic application, with the action of an ordinary dental
30 forceps or other instrument for mechanical operation, substantially as herein-before described, or any mere modification thereof.

In witness whereof, I, the said James Darsie Morrison, have hereunto set my hand and seal, this Twenty-ninth day of June, in the year of our Lord One thousand eight hundred and sixty-five.

35

J. D. MORRISON. (L.S.)

LONDON:Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1865.

THE HISTORY OF THE TOWN OF ALBION

The history of the town of Albion is a subject of some interest, and one which has attracted the attention of many writers. The town was first settled in the year 1792, and its growth has since that time been rapid and continuous. The first settlers were of the Scotch-Irish race, and they brought with them the customs and manners of their native land. The town was at first a simple village, but it soon became a place of some importance, and its commerce began to flourish. The first school was founded in the year 1798, and the first church was built in the year 1805. The town has since that time been the seat of a large and thriving community, and it has become one of the most important places in the State. The history of the town is a record of its progress and its achievements, and it is a subject which should be of interest to every citizen.

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J. B. MERRISON, 1867

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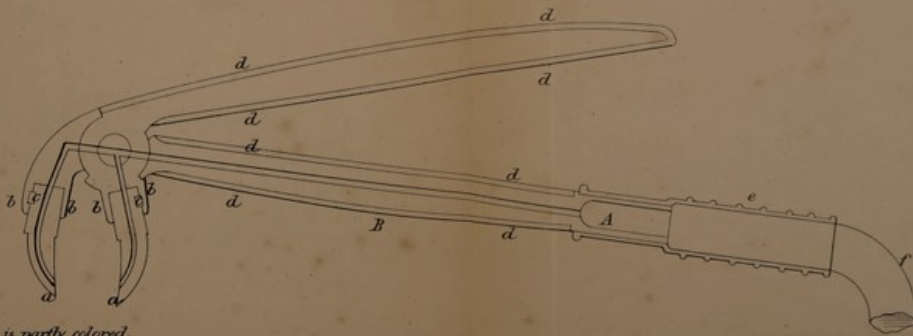
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MORRISON'S SPECIFICATION.

(1 SHEET)

FIG. 1.



FIG. 2.



The filed drawing is partly colored.

FIG. 3.



Drawn on Stone by Millar & Sons.

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Printers to the Queen's most Excellent Majesty, 1865.

