

Specification of William Edward Newton : compound and mould for artificial teeth.

Contributors

Newton, William Edward.

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A.D. 1868, 18th FEBRUARY. N° 536.

SPECIFICATION

OF

WILLIAM EDWARD NEWTON.

COMPOUND AND MOULD FOR ARTIFICIAL
TEETH.

LONDON:

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1868.

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A.D. 1868, 18th FEBRUARY. N° 536.

Compound and Mould for Artificial Teeth, &c.

LETTERS PATENT to William Edward Newton, of the Office for Patents, 66, Chancery Lane, in the County of Middlesex, Civil Engineer, for the Invention of "**AN IMPROVED MATERIAL FOR THE BASE OF ARTIFICIAL TEETH, AND FOR OTHER PURPOSES, AND ALSO AN IMPROVED CONSTRUCTION OF MOULD FOR FORMING DENTAL PLATES.**"—A communication from abroad by John Alexander MacClelland, of Louisville, in the State of Kentucky, United States of America.

Sealed the 26th June 1868, and dated the 18th February 1868.

PROVISIONAL SPECIFICATION left by the said William Edward Newton at the Office of the Commissioners of Patents, with his Petition, on the 18th February 1868.

I, **WILLIAM EDWARD NEWTON**, of the Office for Patents, 66, Chancery Lane, in the County of Middlesex, Civil Engineer, do hereby declare the nature of the said Invention for "**AN IMPROVED MATERIAL FOR THE BASE OF ARTIFICIAL TEETH, AND FOR OTHER PURPOSES, AND ALSO AN IMPROVED CONSTRUCTION OF MOULD FOR FORMING DENTAL PLATES,**" to be as follows:—

This Invention relates, first, to the composition and preparation of a new and improved material for the base of artificial teeth and for other purposes in the arts.

Newton's Improved Compound and Mould for Artificial Teeth, &c.

And, secondly, for the construction of a metal mould in sections for forming dental plates of this improved material. The base of the improved material is pyroxyline, made of cotton or other vegetable fibres in the usual way to form collodion in combination with gum shellac or other suitable resinous substance. The material when in a plastic condition may be used to form dental plates and other objects and when hardened may be cut, carved, turned, and polished or otherwise worked like ivory, amber, ebony, coral, or other hard, tough, and resilient substances, to make a great variety of useful and ornamental articles, for which those rare and valuable substances are employed. It is also well adapted to supply lost parts of the human form, as for instance artificial noses, ears, fingers. In preparing the substance the solution of pyroxyline is reduced to the condition of a syrup, and a solution in ether and alcohol is also made of gum shellac or other suitable resins or gums, and added to the collodion or pyroxyline in any desired proportion, according to the nature, quality, and purpose of the material to be produced as respects hardness, toughness, and delicacy of texture, which compound is thoroughly mixed by agitation. When the solvents have been thoroughly evaporated the dried residuum in the form of thin sheets or scales is then ready to produce a solid homogeneous material. The residuum scales or dried sheets of collodion and its compounds are cut, ground, or otherwise comminuted into fine particles or powder, which are formed into a plastic mass by slightly saturating the powder or particles with ether and alcohol, and in this plastic condition the material is introduced into the mould to form a dental plate or other suitable moulds for other purposes as herein-after described. This improved dental plate mould is constructed of metal sections cast separately within an adjustable metal flask, cylindrical in its form, so that a perfect dental plate with a continuous gum surrounding or enclosing the teeth is moulded. An adjustable cylindrical flask made of thin sheet metal or casting or other suitable substance is made with one open side or division provided with flanges opposite each other, to be held together and adjusted by a set screw in constructing the mould and forming the dental plate. The sectional mould is made in separate parts successively within the flask which is first closed tight with the set screw, and being placed on a plane surface on one end receives an impression of the gums formed of plaster, the impression is put in the bottom of the flask and the mould is then cast upon the plaster form by pouring in

Newton's Improved Compound and Mould for Artificial Teeth, &c.

some soft fusible metal. This mould constitutes the foundation of the dental mould to be constructed. The casting or mould with the impression is then taken out of the flask, and the casting being placed in a reverse position a plaster form of a dental plate is built upon it in
5 which the porcelain teeth are set in their places. The mould with the second form is then put into the flask and being screwed up small wads of clay or putty are introduced on opposite sides of the mould and between the form and the flask, leaving a space in front which is filled by casting another section. A wad of clay is also placed behind
10 the teeth in the form to confine the sectional casting to the front side; the side pads are then removed and their spaces are filled by casting the other sections, at the same time a central core may be cast on the plaster form by placing a clay wad over the cutting edges of the teeth, or the core may be cast afterward. When
15 these several sections of the mould have been thus formed a cap piece is cast upon the core by filling the space around the teeth occupied by the pad. The section mould having been thus constructed of successive castings of the parts within the flask around the mould or form the whole is taken out of the flask together after
20 loosening it. The plaster form is broken up and the metal sections cleaned of all adhering particles, the teeth are taken out and set aside in their regular order of arrangement. The metal sections are all replaced in the flask in their relative positions to each other but upside down in the flask with the cap piece at the bottom. When the teeth
25 are all set in their respective cavities in the mould the improved plastic material is introduced into the mould in sufficient quantity to form a dental plate corresponding to the plaster form. The casting is then set upon it and the flask screwed up tight. A stirrup clamp or other suitable means of exerting pressure upon the opposite castings is then
30 applied and the solvents are squeezed out, partly by a moderate pressure at first, and the material is forced into all the interstices between and around the teeth to form a continuous gum. In the same manner material formed of the dried residuum of collodion and its compound, comminuted or reduced to a powder and made plastic by slight saturation
35 with proper solvents, may be moulded under pressure to solid blocks or cakes of any desired size or shape suitable for various useful purposes as herein-before described.

Newton's Improved Compound and Mould for Artificial Teeth, &c.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said William Edward Newton in the Great Seal Patent Office on the 18th August 1868.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM EDWARD NEWTON, of the Office for Patents, 66, Chancery Lane, in the County of Middlesex, Civil Engineer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Eighteenth day of February, in the year of our Lord One thousand eight hundred and sixty-eight, in the thirty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said William Edward Newton, Her special licence that I, the said William Edward Newton, my executors, administrators, and assigns, or such others as I, the said William Edward Newton, my executors, administrators, and assigns, should at any time agree with, and no others, 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 "**AN IMPROVED MATERIAL FOR THE BASE OF ARTIFICIAL TEETH, AND FOR OTHER PURPOSES, AND ALSO AN IMPROVED CONSTRUCTION OF MOULD FOR FORMING DENTAL PLATES,**" being a communication to me from abroad, upon the condition (amongst others) that I, the said William Edward Newton, 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 Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said William Edward Newton, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the Drawing hereunto annexed, and to the letters and figures marked thereon (that is to say) :—

This Invention relates, first, to the composition and preparation of a new and improved material for the base of artificial teeth, and for other purposes in the arts.

Newton's Improved Compound and Mould for Artificial Teeth, &c.

And, secondly. For the construction of a metal mould in sections for forming dental plates of this improved material in the manner herein particularly described. The base of the improved material is pyroxyline made of cotton or other vegetable fibres in the usual way to form
5 collodion in combination with gum shellac or other suitable resinous substance to form compounds for dental purposes.

The improvement consists in the mode of preparation and working of collodion and its compounds necessary to produce a solid homogeneous material of great strength and tenacity, and remarkable fineness and
10 beauty in the quality of its texture, and which may be used when in a plastic condition for moulding in suitable moulds under pressure into the form of dental plates and other objects. When hardened the substance may be cut, carved, turned, and polished, or otherwise worked like ivory, amber, ebony, coral, or other hard, tough, and resilient
15 substances to make a great variety of useful and ornamental articles, such as beads, buttons, combs, handles for cutlery and instruments, pencil cases, pen holders, keys for pianofortes, billiard balls, mouth pieces for pipes, heads of canes, parasols, and umbrellas, card cases, and many other objects in the arts for which those rare and valuable
20 substances are employed. It is also well adapted to supply lost parts of the human form, as, for instance, artificial noses, ears, fingers, &c. The solution of pyroxyline made of ether and alcohol in the usual manner is reduced to the condition of a syrup; and to form a compound a solution in ether and alcohol is also made of gum shellac or other
25 suitable resins or gums with the same solvents, and added to the collodion or pyroxyline in any desired proportion according to the nature, quality, and purpose of the material to be produced as respects hardness, toughness, and delicacy of texture, which compound is thoroughly mixed by agitation. The solution of pyroxyline and its
30 compounds may be colored to resemble the mucous membrane of the mouth (for the base of artificial teeth) by the addition of vermilion or any shade of color, or black or white by adding proper coloring matter, and the density of the material to be produced may be increased by mixing metallic oxides with the solution; odours may also be
35 imparted to it to render the material permanently fragrant, like ambergris or sandal wood. The compound solution thus prepared, or collodion alone, more or less fine, is allowed to stand in a close vessel until it settles and all the air bubbles are expelled, it is then poured out upon a flat glass plate or other hard and smooth substance, and

Newton's Improved Compound and Mould for Artificial Teeth, &c.

spread over the surface to form a thin sheet. The solvents are then evaporated by exposure to a gentle heat, and they may be recovered for subsequent use by performing the operation of evaporation in a suitable retort or still connected with condensers. When the solvents have been thoroughly evaporated the dried residuum in the form of 5 thin sheets or scales is then ready for the first mechanical operation in the treatment and working of pyroxyline and its compounds to produce a solid homogeneous material, such as has been herein-before described. Attempts have been hitherto made to prepare and work collodion and compounds therewith of animal, vegetable, and mineral substances, 10 and the solutions thereof have been also dried in the form of thin sheets or scales but the improved solid and homogeneous material (resulting from the present Invention) possessing the remarkable and valuable qualities herein-before described has not been heretofore produced or introduced into the arts. When pyroxyline and its 15 compounds are simply evaporated to form dried sheets or scales, the material in this form has but very limited application and value, and in this well-known stage of the treatment of pyroxyline and its compounds there is no novelty. The pyroxyline solution and its compounds have also been employed in a pulpy condition to form into 20 a material of more or less body and consistency in moulds, but this is a crude process from which the improved method of treating and working pyroxyline and its compounds to produce a solid and homogeneous material differs essentially as herein-after explained. The residuum scales or dried sheets of collodion and its compounds are 25 cut, ground, or otherwise comminuted into fine particles or powder and are formed into a plastic mass by slightly saturating the powder or particles with ether and alcohol or other suitable solvent to soften them and render them adhesive; and in this plastic condition the material is introduced into the mould to form a dental plate or other 30 suitable moulds for other purposes as herein-after described.

In the accompanying Drawing Fig. 1 represents the first operation in constructing the mould for a dental plate showing therein a central vertical section of the cylindrical metal adjustable flask A containing a plaster impression B of the gums and roof of the mouth for receiving 35 and forming a metal cast or mould C.

Fig. 2 represents a metal cast or mould B thus first formed, on which is built a form D of plaster or other material for the dental plate in which the teeth are set in place.

Newton's Improved Compound and Mould for Artificial Teeth, &c.

Fig. 3 represents the next operation in constructing the moulds showing the plastic form D on the base cast or mould B placed within the flask A and the front sectional cast or mould E.

Fig. 4 represents the next operation, showing the casts or moulds of
5 other sections; Fig. 5 represents the whole sectional dental mould when completed having one side section F removed; Fig. 6 represents one of the side sections F detached, and Fig. 7 represents the last operation of forming the dental plate in the mould.

This improved dental plate mould is constructed of metal sections
10 cast separately within an adjustable metal flask, cylindrical in its form, and built and employed in such a manner that a perfect dental plate with a continuous gum surrounding or enclosing the teeth is moulded of the improved plastic material under pressure. An adjustable
cylindrical flask A made of thin sheet metal or casting or other suitable
15 substance is made with one open side or division provided with flanges *b, b*, opposite each other, to be held together and adjusted by a set screw *a* in constructing the mould and forming the dental plate. The sectional mould is made in separate parts successively within the flask A which is first closed tight with a set screw *a* and being placed on a
20 plane surface on one end receives an impression of the gums B formed of plaster in the usual manner. The impression B is put in the bottom of the flask, as shown in Fig. 1, and the mould G is then cast upon the plaster form B by pouring in some soft fusible metal; this mould C constitutes the foundation of the dental mould to be constructed. The
25 casting or mould C with the impression B is then taken out of the flask (which is loosened for the purpose) and the casting being placed in a reverse position, as shown in Fig. 2, a plaster form D of a dental plate is built upon it in which the porcelain teeth are set in their places. The mould C with the form D is then put into the flask, as shown in
30 Fig. 3, and being screwed up small wads of clay or putty *c, c*, are introduced on opposite sides of the mould and between the form D and the flask leaving a space in front which is filled by casting another section E. A wad of clay is also placed behind or on the inside of the teeth in the form D to confine the sectional casting E to the front side.
35 The side pads *c, c*, are then removed and their spaces are filled by casting the sections F, F, Fig. 4. At the same time a central core G may be cast on the plaster form D by placing a clay wad *d* over the cutting edges of the teeth, or the core G may be cast afterward. When these several sections of the mould have been thus formed the wad *d* is

Newton's Improved Compound and Mould for Artificial Teeth, &c.

removed and a cap piece H is cast upon a core G by filling the space around the teeth occupied by the pad *d* and forming a perfect metal mould thereof as shewn in Fig. 5. The section mould having been thus constructed of successive castings of the parts within the flask around the mould or form D, the whole is taken out of the flask together 5 (after loosening it), the plaster form D is broken up and the metal sections cleaned of all adhering particles, the teeth are taken out and set aside in their regular order of arrangement. The metal sections (except the section C) are all replaced in the flask in their relative positions to each other (but up side down) with the cap piece H at the 10 bottom as shewn in Fig. 7. The teeth are all set in their respective cavities in the mould, and the plastic material prepared as before described is introduced into the mould in sufficient quantity to form a dental plate corresponding to the plaster form D. The casting C is then set upon it and the flask A is screwed up tight and a stirrup clamp 15 or other suitable means of exerting pressure upon the opposite castings C, H, is then applied and the solvents are squeezed out partly by a moderate pressure at first, the material being at the same time forced into all the interstices between and around the teeth to form a continuous gum. The mould and material in it are then subjected to 20 a moderate degree of heat to cure and dry the dental plate, commencing with an application of about one hundred degrees Fahrenheit and gradually raising the temperature to about one hundred and fifty degrees within twenty-four hours, during which time the pressure upon the material in the mould is renewed and increased from time to time until 25 all traces of the solvents are dispelled and the material is hardened and solidified as desired. The plate may then be taken from the mould and after being polished is completed and ready for use.

In the same manner the improved material (formed of the dried residuum of collodion and its compound comminuted or reduced to 30 a powder and made plastic by slight saturation with proper solvents) may be moulded under pressure to solid blocks or cakes of any desired size or shape suitable for various useful purposes in the arts as herein-before mentioned.

Having now described the Invention that has been communicated to 35 me as aforesaid, and having explained the manner of carrying the same into effect, I claim as the Invention secured to me by Letters Patent as aforesaid,—

Newton's Improved Compound and Mould for Artificial Teeth, &c.

First. The method herein set forth of preparing and working pyroxyline and its compounds to form an improved solid and homogeneous material for dental plates and other purposes.

Second. Forming dental plates of the improved material prepared
5 by working pyroxyline and its compounds in the manner herein described.

Third. I claim forming dental plate moulds of sectional castings within a cylindrical adjustable flask as specified.

Fourth. I claim the use of a clamping adjustable flask for forming
10 a dental plate mould in sections within it constructed and operating as described.

Fifth. I claim forming a dental plate of plastic material within a sectional mould under pressure as herein set forth.

In witness whereof, I, the said William Edward Newton, have
15 hereunto set my hand and seal, the Seventeenth day of August, in the year of our Lord One thousand eight hundred and sixty-eight.

W. E. NEWTON. (L.S.)

Witness,

20 J. W. MOFFATT,
66, Chancery Lane.

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1868.

My invention consists in the use of a certain material for dental plates and other purposes.

Second, I claim the use of a certain material for dental plates and other purposes.

Third, I claim the use of a certain material for dental plates and other purposes.

Fourth, I claim the use of a certain material for dental plates and other purposes.

In witness whereof, I the said William Edward Newton, have hereunto set my hand and seal, the twenty-first day of August, in the year of our Lord One thousand eight hundred and sixty-eight.

W. E. NEWTON (s.s.)

Witness my hand and seal, the twenty-first day of August, 1868.

Attest my hand and seal, the twenty-first day of August, 1868.

LONDON:
Printed by George Edwardes and William Forster, 1868.

Printed by George Edwardes and William Forster, 1868.

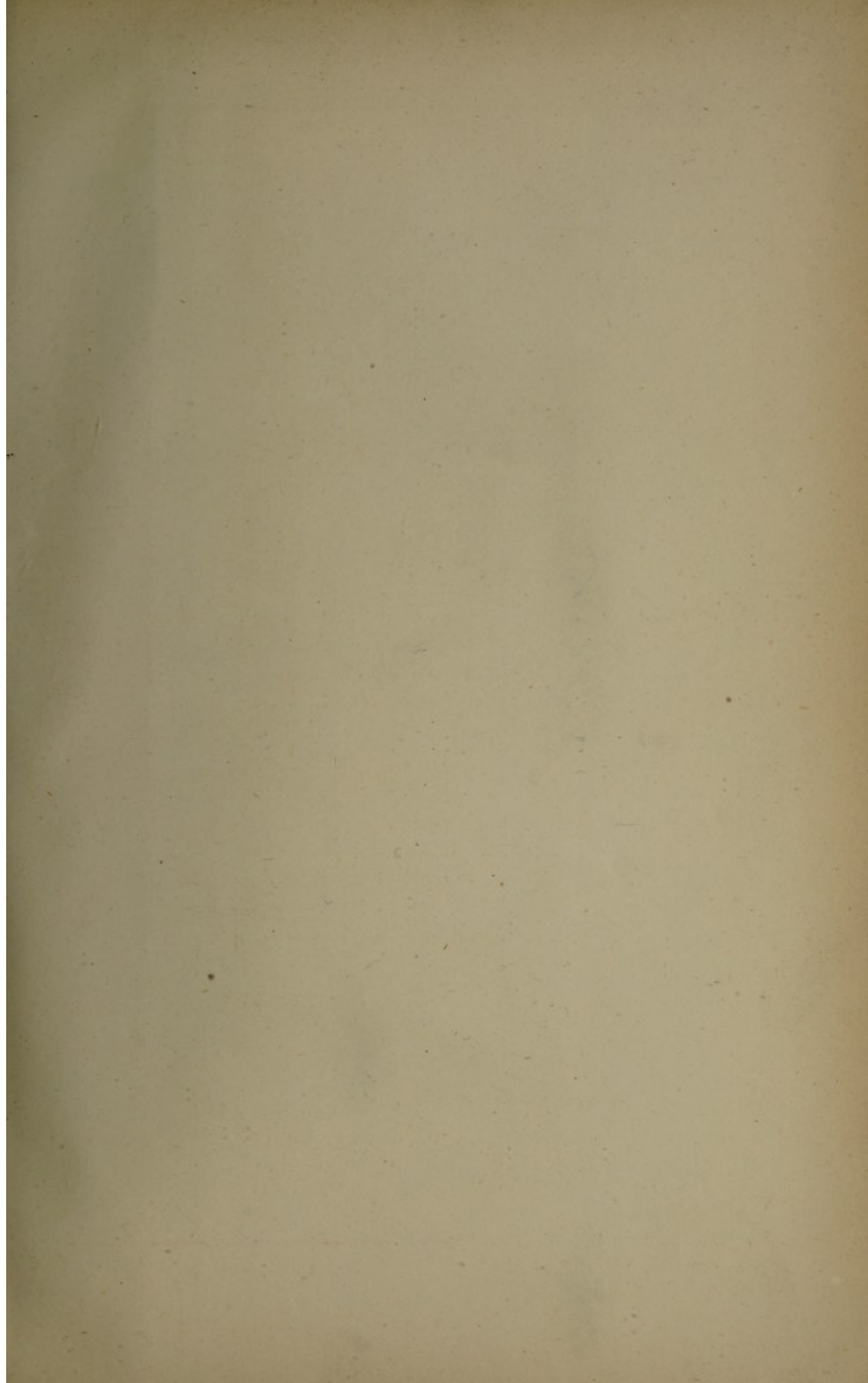
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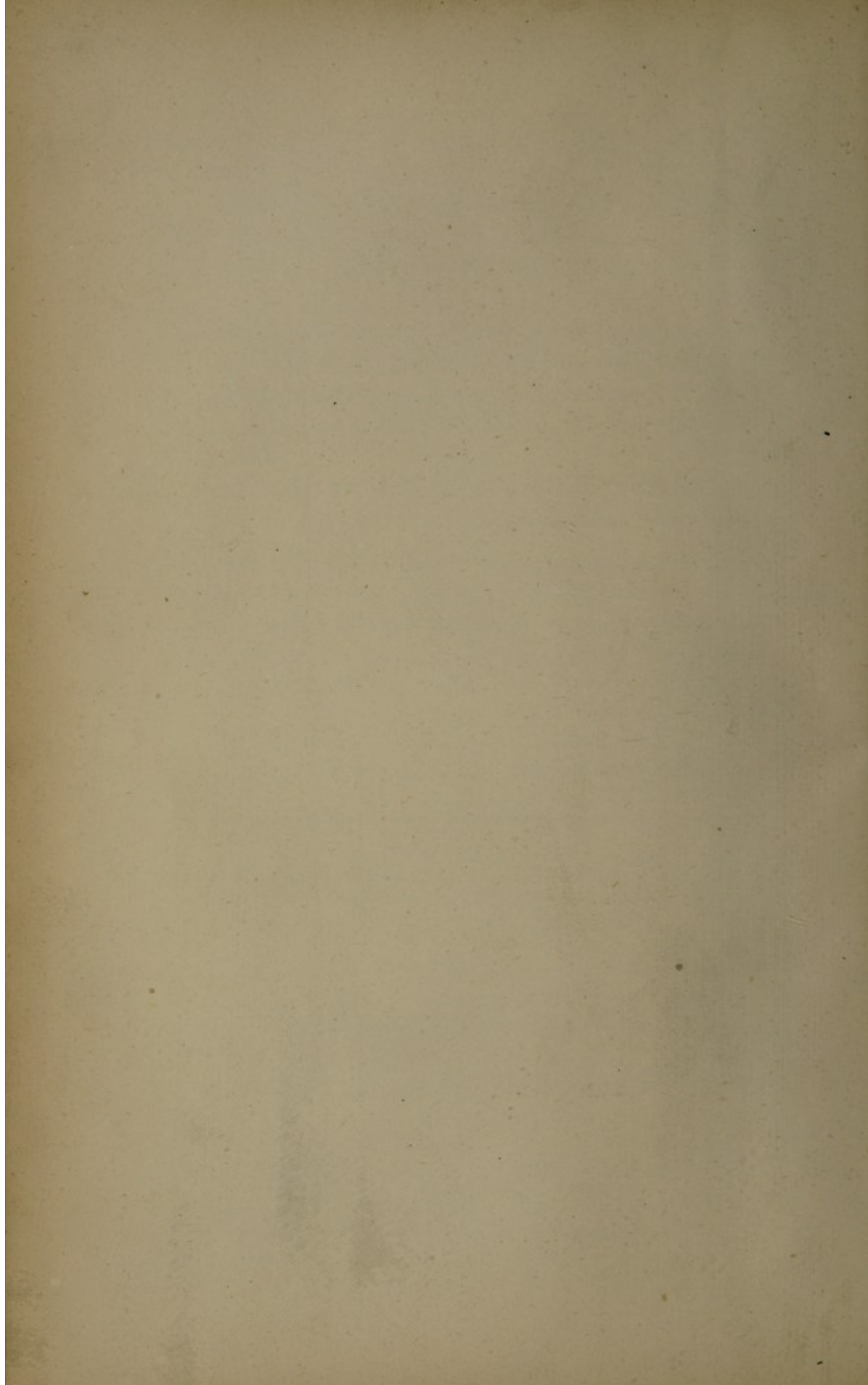
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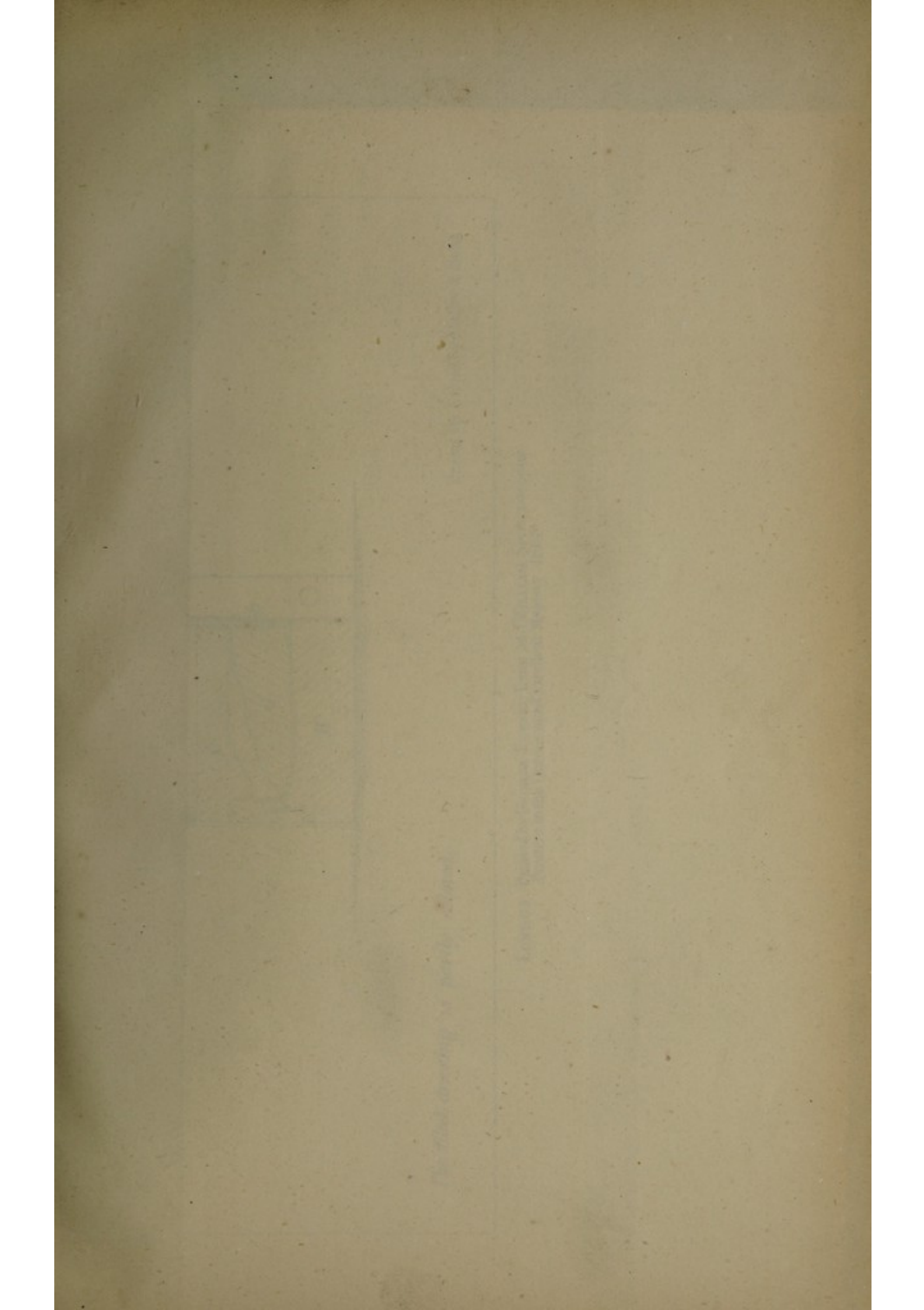
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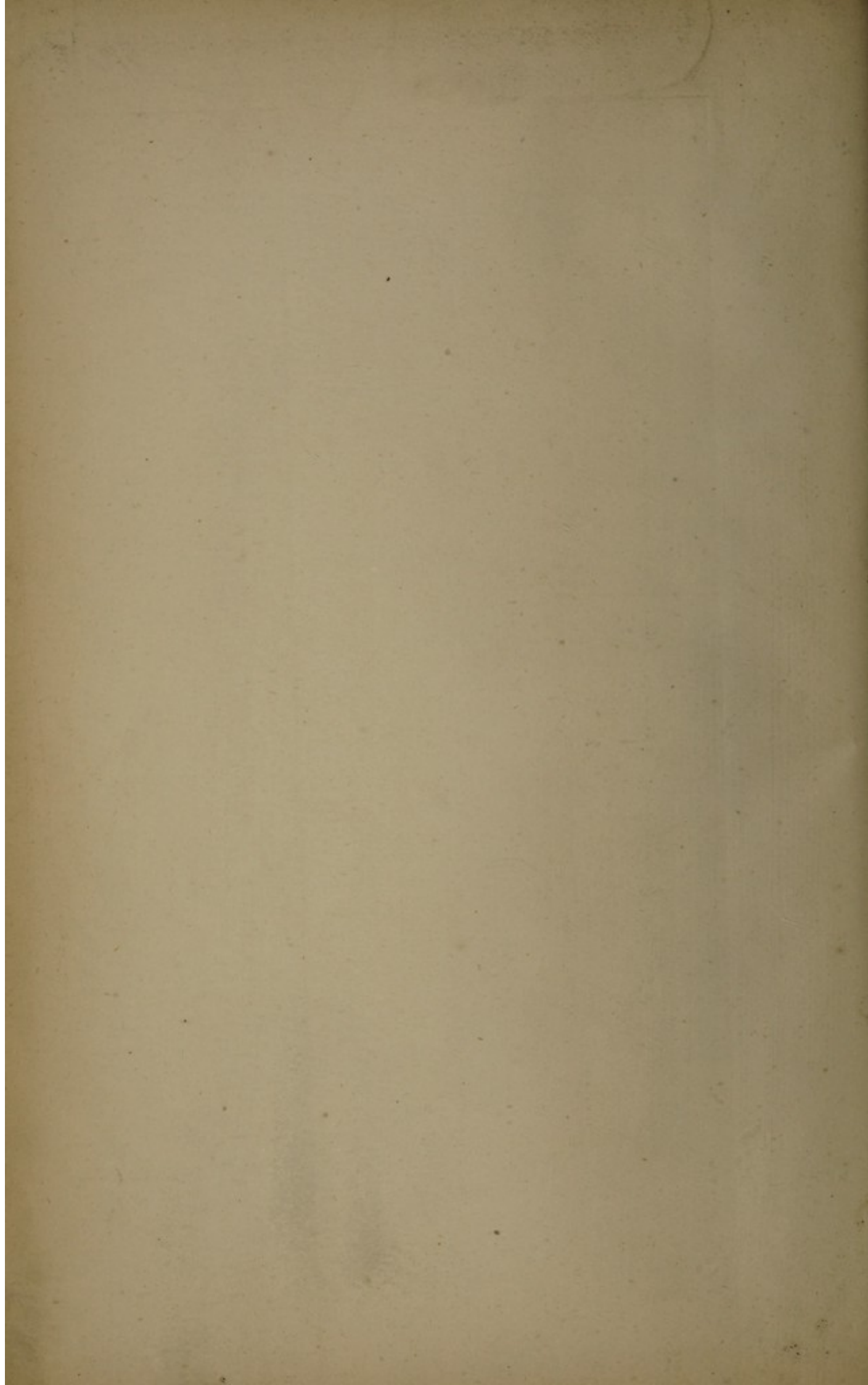
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A.D. 1868, FEB. 18, N^o 536.
NEWTON'S SPECIFICATION.

FIG. 1.

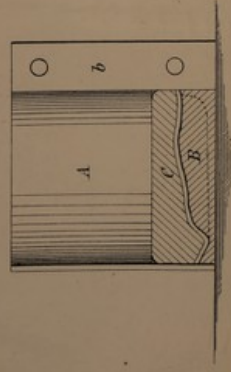


FIG. 2.

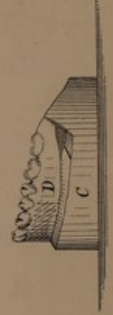


FIG. 3.



FIG. 4.



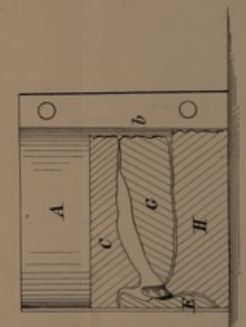
FIG. 5.



FIG. 6.



FIG. 7.



The filed drawing is partly colored.

Drawn on Stone by Malby & Sons

