

Specification of Eduardo Giampietror : articial tympanum.

Contributors

Giampietro, Eduardo.

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A.D. 1874, 23rd *MARCH*. N° 1010.

S P E C I F I C A T I O N

OF

EDUARDO GIAMPIETRO.

ARTIFICIAL TYMPANUM.

LONDON:

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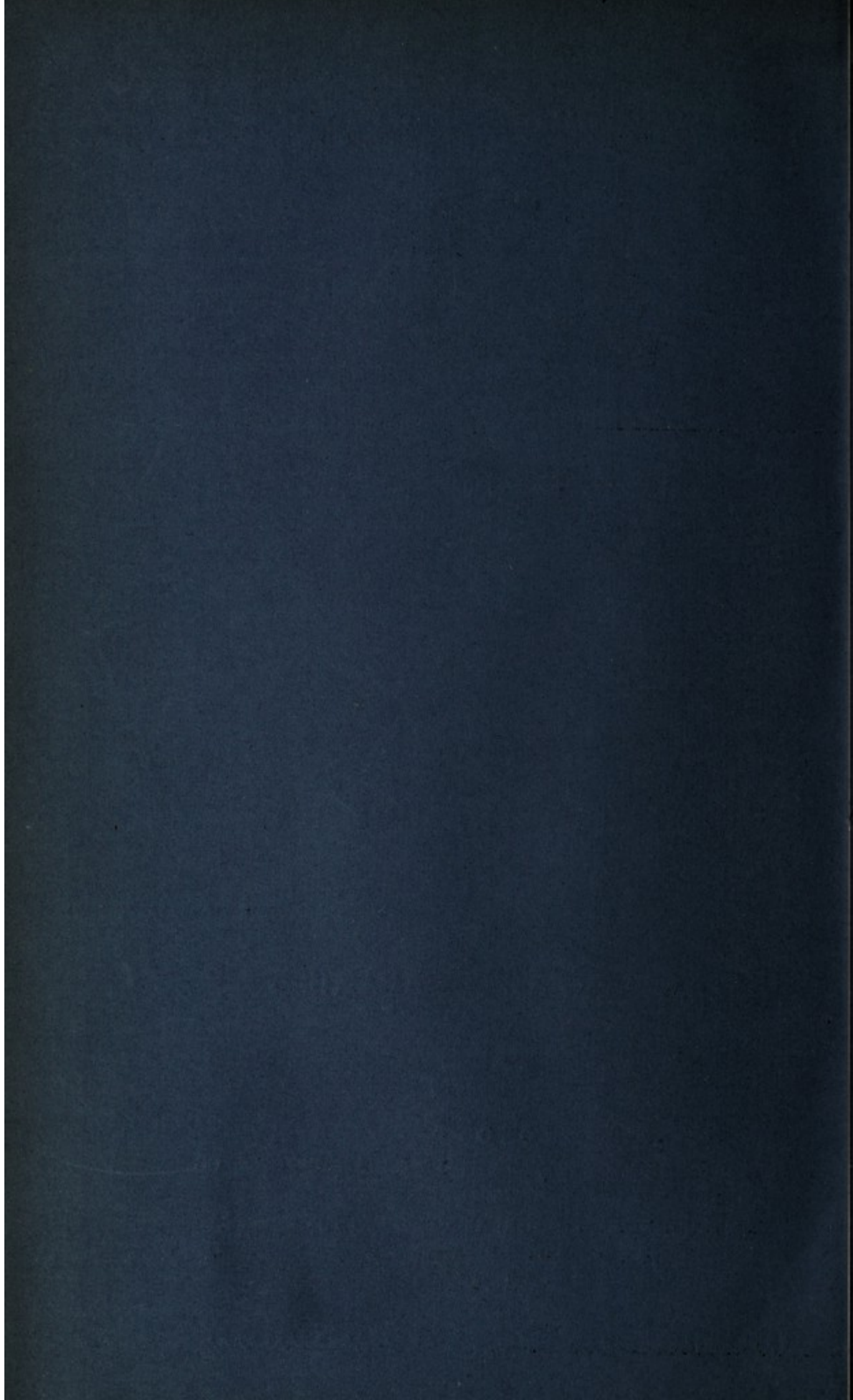
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A.D. 1874, 23rd *MARCH*. N° 1010.

Artificial Tympanum.

LETTERS PATENT to Eduardo Giampietro, of Naples, in the Kingdom of Italy, Doctor of Medicine, for the Invention of "**AN ARTIFICIAL TYMPANUM.**"

Sealed the 11th September 1874, and dated the 23rd March 1874.

PROVISIONAL SPECIFICATION left by the said Eduardo Giampietro at the Office of the Commissioners of Patents, with his Petition, on the 23rd March 1874.

I, **EDUARDO GIAMPIETRO**, of Naples, in the Kingdom of Italy,
5 Doctor of Medicine, do hereby declare the nature of the said Invention for "**AN ARTIFICIAL TYMPANUM,**" to be as follows:—

I have long contemplated the construction of a small instrument uniting all the advantages claimed under the title of an artificial tympanum without presenting any of the inconveniences which I have
10 observed in the instruments of Bauzer, Leschevin, Toad, Autenrieth, Miot, and Toynbee, and after many trials and suppositions I have at last invented one which appears to me capable of satisfying every practical requirement.

Giampietro's Improved Artificial Tympanum.

On the accompanying Sheet of Drawing Fig. 1 is a longitudinal view of an artificial tympanum embodying my Invention; Fig. 2 an end view of same; and Fig. 3 detached part, the whole drawn to a scale seven times the ordinary size.

My artificial tympanum is composed of two parts, the one of metal, 5 the other of flexible india-rubber.

1°. The india-rubber part is formed of a disc or washer *a* slightly ovoid, presenting two surfaces and an edge. The internal surface, that is to say, that which is to come against the natural tympanum or upon the bottom of the meatus is plane and smooth. The other surface or 10 external surface has at its lower third part a boss *b* of about $\frac{1}{25}$ of an inch in thickness which lengthens perpendicularly into a stem *c* of about $\frac{1}{25}$ th of an inch in thickness by a length of about $\frac{7}{25}$ of an inch.

2°. The metal part is composed of a spiral *d*, preferably of gold, 15 surrounding and firmly holding the above-mentioned stem and fastened at one end to the boss of the disc so that this latter cannot in any way turn upon its axis. This spiral is soldered at the other extremity to one end of the lower branch *e* of inoxydisable metal and from $\frac{6}{25}$ to $\frac{7}{25}$ of an inch in length, terminating in a small ball *f* behind which a small 20 ring *g* is soldered vertically and transversely on the said branch. At its point of junction *m* with the spiral the said branch is jointed to another analogous branch *k* termed the upper branch and terminating in a horizontal segment of a circle *l* of, say, 0^m 001,5 in breadth and 0^m 000,08 in thickness, in shape of a half moon of a size equal to 25 one-fourth of the circumference of the meatus and a little more, with the concavity turned downward and having two small balls at its ends.

In the centre of the half moon is soldered a ring *n* a little broader than the lower ring and placed a little more forward so that on pressing 30 these two branches these rings do not touch. A small spring *h* placed behind the lower ring keeps the two branches apart. The two branches are slightly curvilinear and concentric. The branches of this instrument measure $\frac{1}{25}$ of an inch in thickness, their length for a man of thirty years of age and upward is $\frac{3}{5}$ of an inch, but as this is a variable 35 element it is well to regulate it according to the measure of the meatus of each patient.

Giampietro's Improved Artificial Tympanum.

The mode of applying the instrument is as follows:—The patient being seated, the head inclined upon the shoulder opposite to the diseased ear, the surgeon standing enlightens the bottom of the ear either by causing a ray of the sun to penetrate it, or if the sun is not
5 visible by using the ordinary means of external otoscopy. Directly he has distinguished the point of the perforation he will take the external ear between the forefinger and thumb of his left hand and will pull it forcibly upward and outward, then with the right hand armed with delicate nippers he will take the artificial tympanum by the inside of the
10 two rings *g, n*, then pressing together the branches of the nippers and consequently those of the tympanum he will promptly introduce it into the meatus, following the postero-anterior and downward direction, that is to say, following an imaginary line passing from the centre of the orifice of the meatus through the opposite angle of the mouth. This
15 done the operator, leaving the branches of the nippers free, will permit the internal spring of my little instrument to open the two branches, which will fix themselves the one at the top the other at the bottom of the meatus, finally he will withdraw the nippers.

If the tympanum has been constructed to the exact measurement of
20 the ear operated upon the two small balls should fix themselves in the middle of the length of the meatus or only a few millimetres beyond the limit of the osseous part. It is therefore necessary to ascertain firstly if the instrument has been made according to the given measurement.

25 When the surgeon has perfectly secured the instrument in the desired position he will with his thumb exert a suitable pressure upon the tragus pushing it on the orifice of the meatus, and he will pull the external ear in various directions requesting the patient at the same time to execute movements of mastication. If these manœuvres cause
30 no painful sensation within the meatus it will be a certain proof of the proper application of the instrument and of its toleration by the patient.

Giampietro's Improved Artificial Tympanum.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Eduardo Giampietro in the Great Seal Patent Office on the 21st September 1874.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, EDUARDO GIAMPIETRO, of Naples, in the Kingdom of Italy, Doctor of Medicine, 5 send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-third day of March, in the year of our Lord One thousand eight hundred and seventy-four, in the thirty-eighth year of Her reign, did, for Herself, Her heirs and successors, 10 give and grant unto me, the said Eduardo Giampietro, Her special licence that I, the said Eduardo Giampietro, my executors, administrators, and assigns, or such others as I, the said Eduardo Giampietro, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter 15 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 ARTIFICIAL TYMPANUM,**" upon the condition (amongst others) that I, the said Eduardo Giampietro, my executors or administrators, by an 20 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 25 Patent.

NOW KNOW YE, that I, the said Eduardo Giampietro, 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:—

30

My Invention relates to an artificial tympanum uniting all the known improvements which are necessary for this kind of apparatus without any of the inconveniences common in instruments of the same kind Invented by Bauzer, Toad, Autenrieth, Leschevin, & Toynbee.

This Invention is illustrated in the accompanying Drawings in which 35 Fig. I. represents an end view of the instrument; Fig. II. a side

Giampietro's Improved Artificial Tympanum.

longitudinal view of the same; and Fig. III., a sectional transversal view of the india-rubber disc. Similar letters indicate corresponding parts.

My artificial tympanum is formed of two parts, one of metal the other
5 of flexible india-rubber.

The india-rubber part is formed of a disc or slightly ovoid rundle *a* showing two surfaces and one rim. The inside face, that is to say, that which is destined to rest on the natural tympanum or upon the basis of the auditory duct is flat and smooth. At a third of the lower part of the
10 outside face is fixed a projection *b* of about a millimetre in thickness which is elongated perpendicularly into a rod or pin *c* one millimetre thick and seven millimetres long.

2nd. The metallic part consists of a golden spiral *d* of which the interior receives and holds the above-mentioned rod firmly and is fastened
15 at one end of its extremities to the projection of the disc, in such a manner that the latter cannot turn upon its axis in any way whatever. This spiral is soldered to the other extremity at one end of the lower branch *e* formed with an inoxidizable metal from 6 to 7 millimetres long which terminates in a little ball *f* behind which a small ring *g* is
20 soldered vertically and transversally. At the point of junction *m* with the spiral spring the said branch is linked to another analogous upper branch *k* terminating in a horizontal part of a circle *l* about 0^m.0015 broad and 0.00008 thick in the shape of a half moon with a dimension equal to the fourth of the circumference of the auditory duct and curved
25 downwards with rather more concavity and terminating its extremities in two little balls.

In the centre of the half moon is soldered a ring *n* rather larger than the lower one and placed more foreward so that in pressing the two branches these rings do not touch. A little spring *h* placed behind the
30 lower ring keeps the two branches one from the other; the two branches *e* and *k* are slightly curvilinear and concentric. The branches of this instrument are a millimetre thick, their length for the ear of a man about thirty years old is 15 millimetres about, but as that is a variable element it is well to regulate it according to the measurement of each
35 patient's auditory duct.

The mode of applying the instrument is as follows:—The patient being seated, his head bent towards the opposite shoulder to the diseased

Giampietro's Improved Artificial Tympanum.

ear, the surgeon standing brings the centre of the ear properly into the light, either by bringing a ray of the sun to bear on it, or in default of sun by using the ordinary means of external otoscopy. As soon as he has distinguished the point of perforation he will take the trumpet of the ear between his forefinger and thumb and pull it strongly up and down, 5 then with a pair of pincers provided with thin nippers in his right hand he will take hold of the artificial tympanum by the interior of the rings *g*, *n*, then pressing the handles of the pincers and thus also the branches *a* and *k* of the tympanum he will introduce the latter promptly into the auditory duct following the postero-anterior direction 10 and from top to bottom, that is to say, following an ideal line passing from the centre of the orifice of the duct through the opposite angle of the mouth; then the handles of the pincers being freed the two branches of the apparatus will be opened under the action of the inside spring *h* & will fix themselves one at the top the other at the bottom of the 15 auditory duct, and afterwards the pincers will be drawn out.

If the tympanum has been constructed according to the exact measurement of the ear operated upon, the two little balls should fix themselves at a point in the middle of the length of the duct or only a few millimetres beyond the limit of its bony portion. It is then 20 necessary first of all to make sure whether the instrument has been constructed according to the indicated measurement.

After the surgeon has safely placed the instrument in the required position let him with his thumb employ a suitable pressure on the tragus while pushing it on the orifice of the auditory duct, and let him 25 pull the trumpet of the ear in different ways and ask the patient to go through the movements of mastication. If these experiments give place to no painful sensations in the interior of the duct it will be a certain proof of the proper application of the instrument and of the want of pain to the patient. 30

It is easily seen from the description of my instrument with what facility and safety it can be inserted and withdrawn, and how completely it may be borne, since while slightly resting on the tympanum it is maintained in position without fear of it swerving by the two free branches which remain open in the duct, and solidly fixed against its 35 walls by the effect of the inside spring. The little spiral spring *d* which sustains the india-rubber disc is destined to lessen the shocks which

Giampietro's Improved Artificial Tympanum.

the membrane would produce on the surface of the artificial tympanum on the deep and rapid expirations of sneezing, so that the membrane losing none of its liberty of movement and undergoing no abnormal pressure accustoms itself without any difficulty to the action of the
5 india-rubber disc *a*, by means of which the waves of sound will be easily transmitted to the bound up ossicles.

To sum up the advantages that my instrument offers in practice can be reduced to four, viz.,—

- 1st. Facility of introduction and withdrawal.
- 10 2nd. Absolute freedom from pain.
- 3rd. A notable amelioration in the hearing.
- 4th. Permanent immobility.

Having thus described the nature of my Invention, and the manner of carrying it into effect, I would have it understood that I do not
15 confine myself to the precise details above enumerated, as these may be obviously modified without departing from the principle of the Invention; but what I claim and desire to secure by the said Royal Letters Patent is, an artificial tympanum constructed substantially as above described, and represented in the different Figures of the accom-
20 panying Drawings.

In witness whereof, I, the said Eduardo Giampietro, have hereto set my hand seal, this Seventeenth day of September, in the year of our Lord One thousand eight hundred and seventy-four.

25

EDUARDO GIAMPIETRO. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1874.

Gibson's Improved Artificial Tympanum.

A membrane would be placed on the surface of the artificial tympanum, the deep and rapid vibrations of sound, so that the membrane being none of its liberty of movement and undergoing no abnormal strain, accounts itself without any difficulty to the action of the diaphragm, and by means of which the waves of sound will be fully transmitted to the sound up ossicles.

To sum up the advantages that my instrument offers in practice, can be reduced to four, viz.—

1st. Facility of introduction and withdrawal.

2nd. Absolute freedom from pain.

3rd. A notable amelioration in the hearing.

4th. Permanent immobility.

Having thus described the nature of my invention, and the manner of using it into effect, I would have it understood that I do not claim myself to the precise details above enumerated, as those may be obviously modified without departing from the principle of the invention; but what I claim and desire to secure by the said Royal Letters Patent is, an artificial tympanum constructed substantially as above described, and represented in the different figures of the accompanying Drawings.

In witness whereof, I, the said Edmund Gibson, have hereunto set my hand, and the seal of the said Edinburgh, in the year of our Lord One thousand eight hundred and seventy-four, the 11th day of September.

EDMUND GIBSON. (A.C.)

Witness my hand and seal, this 11th day of September, 1874.

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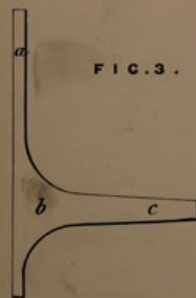
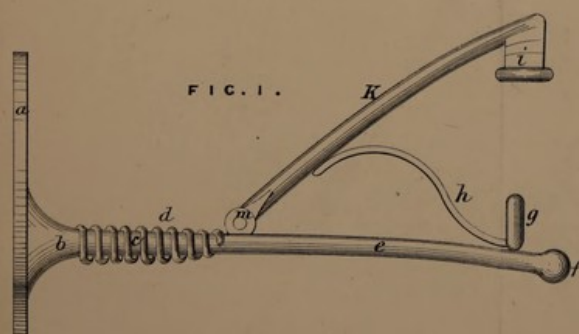
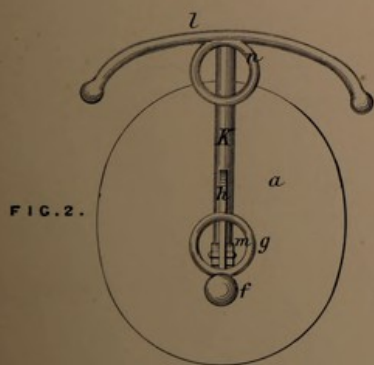
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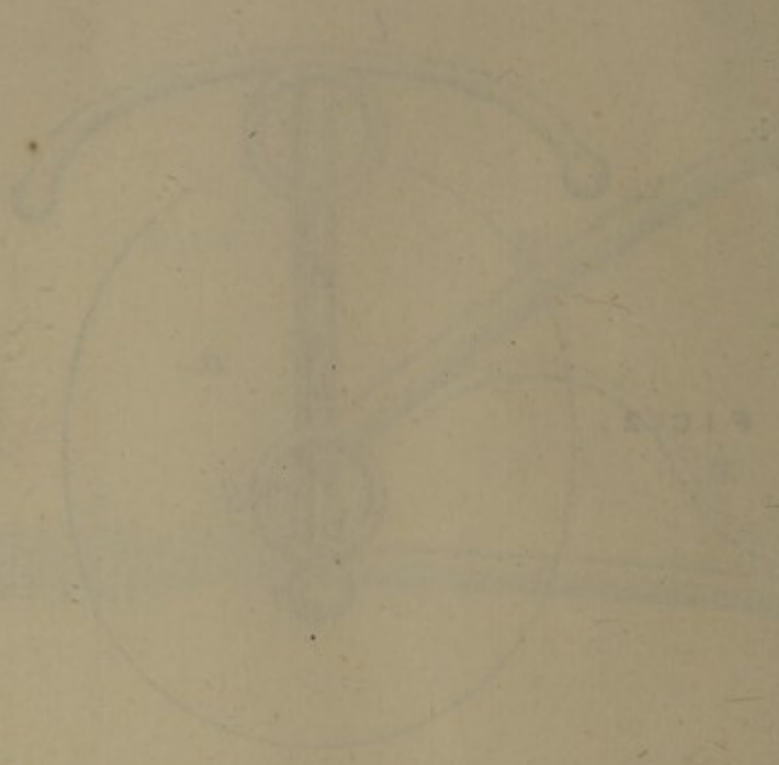
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FIG. 1.

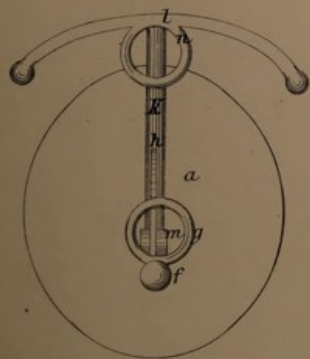


FIG. 2.

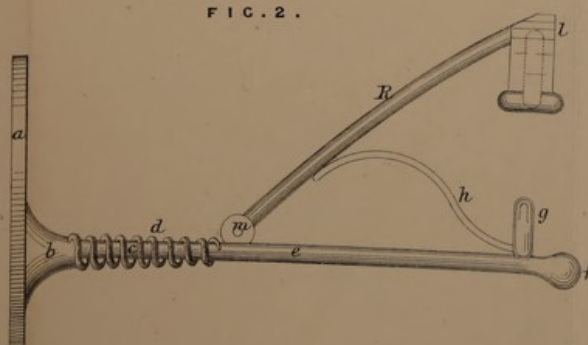
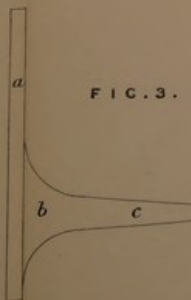


FIG. 3.

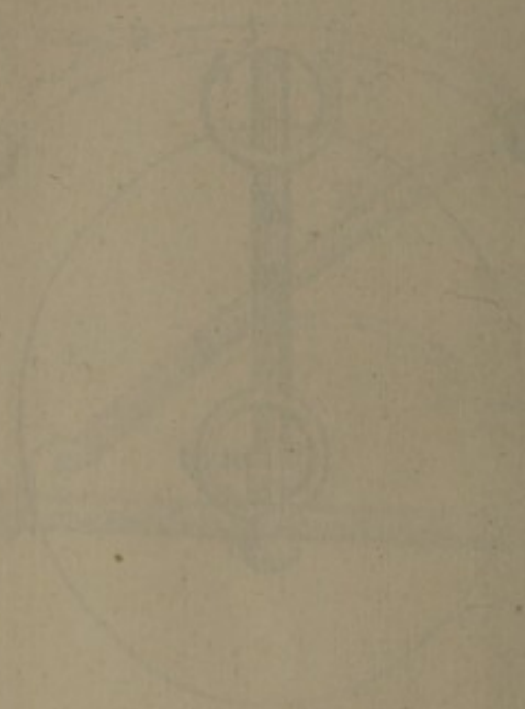


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