

# **Improvements in and relating to instruments for treating and operating on the eyes / [James Bainbridge].**

## **Contributors**

Bainbridge, James (Costume designer)  
W. R. M. Thomson & Co.

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Wellcome Collection  
183 Euston Road  
London NW1 2BE UK  
T +44 (0)20 7611 8722  
E [library@wellcomecollection.org](mailto:library@wellcomecollection.org)  
<https://wellcomecollection.org>

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A.D. 1888, 22nd MAY. N° 7553.

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PROVISIONAL SPECIFICATION.

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Improvements in and relating to Instruments for Treating and  
Operating on the Eyes.

I, JAMES BAINBRIDGE, of 18 Helen Street, Govan, Lanarkshire, Engineer, do hereby declare the nature of my invention to be as follows:—

This Invention has reference to improvements in and relating to instruments for treating and operating on the eyes, with the object of causing by what is known as  
5 “dry cupping” a proper amount of blood to circulate through the eyes, and restore the diminished convexity of the cornea of the eyes, and thus cure long-sightedness, dimness of vision, weakness of sight, short-sightedness and other diseases of the eyes. And which instruments will be a great improvement over the ivory cup and india-rubber ball appliances heretofore in use, as the suction, tension, and pressure equally  
10 on both eyes can be regulated to the extent desired, while the cup attachments can be placed on the cornea of the eyes in a more equal and reliable manner.

According to my invention I use two cups, of hollow conoidal or cylindrical shape, with plain edges, or curved at their outer edges concavely to the convex shape of the eye, and made of ivory, wood, vulcanite, horn, or other material, and I joint or  
15 connect to the hollow stems of these, the ends of flexible tubes preferably of india-rubber, and joint or connect the other ends of these flexible tubes to the duplex branches of a central hollow or tubular mouthpiece, or the two flexible tubes might be joined to one tube, provided with a mouth-piece.

The instrument thus formed, is used as follows;—the mouth-piece is placed in the  
20 mouth, and the outer open edges of the hollow cups are placed air-tight over the eyes to be dry cupped, and the person sucks the mouth-piece, the suction of which, through the flexible tubes, will remove the air from the cups and cause a partial vacuum and retain the cups on the eyes, and draw the cornea of the eye to the proper convex or spherical form and feeling of comfort by the person, the tongue  
25 acting as a valve on the end of mouthpiece to retain the suction. When desired the new or improved instrument can be made for operating only on one eye at a time, by using only one hollow eye-cup attached to a flexible tube with a mouth-piece on the other end of tube.

[Price 8d.]



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*Bainbridge's Impts. in & relating to Instruments for Treating & Operating on the Eyes.*

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The cups would be formed with stems and grooves for shipping into the flexible tubes, and have a metallic conoidal ferrule for fitting over this to make it perfectly tight, which ferrule might be engraved or ornamented.

When concave wood buttons are attached within the hollow cups by a light spiral or coiled wire spring, by a further improvement of my invention the spring is guided 5 by being placed within a vertical tube or socket in the centre of the cup, and which will keep the button attached to the upper end of spring always in position in the centre of the cup to press truly and gently on the cornea of the eye, and shape it to the desired convexity to suit more especially short sighted people.

In some cases, instead of mounting the concave button within the cup on the light 10 spiral spring, by a further improvement be mounted over a hollow central small rubber or flexible close air tube or bag within the cup, that would press out and lengthen light bent springs or toggle links, which would gently press out the button against the cornea of the eye, proportionate to the suction within the cups and 15 sustainable with comfort by the patients exerting it themselves.

Dated this 22nd day of May 1888.

W. R. M. THOMSON & Co.,  
Agents.

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## COMPLETE SPECIFICATION.

Improvements in and relating to Instruments for Treating and  
Operating on the Eyes.

I, JAMES BAINBRIDGE, of 18 Helen Street, Govan, Lanarkshire, Engineer, do hereby declare the nature of my invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement in writing, reference being had to the accompanying Sheet of Drawings and to the letters and figures marked thereon, that is to say :—

This Invention has reference to improvements in and relating to instruments for treating and operating on the eyes, with the object of causing by what is known as "dry cupping" a proper amount of blood to circulate through the eyes, and restore the diminished or proper convexity of the cornea of the eyes, and thus cure long-sightedness, dimness of vision, weakness of sight, short-sightedness and other diseases of the eyes. And which instruments will be a great improvement over the ivory cup and india rubber ball appliances heretofore in use, as the suction, tension, and pressure equally on both eyes can be regulated to the extent desired, while the cup attachments can be placed on the cornea of the eyes in a more equal and reliable manner.

And in order that my said invention and the manner of performing or carrying the same into effect or practice may be properly understood, I have hereunto appended an explanatory Sheet of Drawings, in which the same reference letters are used to indicate corresponding parts in all the Figures where shown. Figure 1 is a perspective view showing the new or improved instrument as applied to the eyes of a man for treating and operating on same. Figure 2 is a sectional view of one construction of the instrument as suitable for restoring the cornea of the eye to its greater convexity when flattened by age or weakness of the eye. While Figure 3 is a corresponding view of the instrument as more suitable for treating and operating on short-sighted people, for flattening the cornea of the eyes to make them more long sighted, and in which spiral springs and curved buttons are used to press on the cornea of the eyes, the springs being steadied by my improvements within a vertical tube or socket. And Figure 4 is a view showing a simpler and more inexpensive form of the instrument shown in Figure 2.

Referring to these Drawings, according to my invention I use two cups A A, of hollow conoidal or cylindrical shape, with plain or rounded and circular edges, to suit the shape of the eye and made of ivory, wood, vulcanite, horn, or other equivalent material, and I joint or connect to the perforated stems A<sup>1</sup> of these, the ends of flexible tubes B B preferably of vulcanized india rubber, and joint or connect the other ends of these flexible tubes B, as shown in Figure 4 to the duplex branches B<sup>1</sup> B<sup>1</sup> of a central hollow or tubular mouth-piece B<sup>2</sup>, or the two flexible tubes B might be formed into or joined to one tube B<sup>11</sup>, provided with a mouth-piece B<sup>2</sup>, as shown in Figures 1 to 3, in which is shown an enlarged or bag part at B<sup>3</sup> for storing up pressure of air or assisting the vacuum caused by the suction of the mouth within the tubes to operate on the eyes as hereinafter described.

Referring to Figures 1, 2, and 4, the instrument thus formed, is used as follows :— the mouth-piece B<sup>2</sup> is placed in the mouth, and the outer open edges of the hollow cups A A, are placed air-tight over the eyes to be dry cupped, and the person sucks



*Bainbridge's Impts. in & relating to Instruments for Treating & Operating on the Eyes.*

the mouthpiece B<sup>2</sup>, the suction of which, through the flexible tubes B B, will remove the air from the cups and cause a partial vacuum and retain the cups on the eyes, and draw the cornea of the eye to the proper convex or spherical form within the cups A to any desired extent and feeling of comfort by the person, the tongue acting as a valve on the end of mouth-piece B<sup>2</sup>, to retain the suction or partial vacuum 5 within the cups and tubes A, B. When desired the new or improved instrument can be made for operating only on one eye at a time by using only one hollow eye-cup A, attached to one flexible tube B, with one mouth-piece B<sup>2</sup> on the other end of the tube B.

The cups A A are formed with stems and grooves at A<sup>1</sup> and corresponding stems B<sup>1</sup> 10 are formed on the mouth-piece B<sup>2</sup> for being inserted into the ends of the flexible tubes B, and may have a metallic conoidal ferrule *b* for fitting over these, to make same perfectly tight, which ferrule might be engraved or ornamented.

When concave wood buttons A<sup>11</sup> are attached within the hollow cups A as shown in Figure 3 by a light spiral or coiled wire spring A<sup>2</sup>, by a further improvement of 15 my invention the spring is guided by being placed within a vertical tube or socket A<sup>3</sup>, in the centre of the cup A, and which will keep the button A<sup>11</sup>, attached to the upper end of spring A<sup>2</sup> always in position in the centre of the cup A to press truly and gently on the cornea of the eye to the pressure of the spring and slightly flatten or shape it to the desired convexity to suit more especially for short sighted 20 people to correct the focus of their eyes.

Referring to Figures 1 to 3, the fingers and thumb, pressing on opposite sides of the bag B<sup>3</sup>, when the end of the mouth-piece B<sup>2</sup> is sealed by the tongue after sucking it, enables the person to regulate the pressure or vacuum within the cups A and tubes B, and action on the eye to the greatest nicety and feeling by the instrument, 25 although this may be done by the suction of the mouth alone in the same way as in the simple form of the instrument shown in Figure 4.

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 :— 30

First. The construction, or arrangement and combination of the parts of instruments for treating and operating on the eyes, substantially as and for the advantages herein described and distinguished in reference to and shown in the accompanying Drawings.

Second. The constructing of instruments for treating and operating on the eyes, with two eye cups and connecting tubes attached to one suction mouth-piece, sub- 35 stantially as and for the advantages herein described and distinguished in reference to and shown in the accompanying Drawings.

Third. The constructing of instruments for treating and operating on the eyes provided with guide tubes or stems for the spiral springs which press the buttons against the cornea of the eye or eyes, substantially as and for the advantages herein 40 described in reference to and shown in the accompanying Drawings.

Fourth. The constructing of instruments for treating or operating on the eye, with one eye-cup, flexible tube and mouth-piece, substantially as and for the advantages herein set forth.

Dated the 13th February 1889.

W. R. M. THOMSON & Co.,  
96, Buchanan Street, Glasgow,  
Agents.

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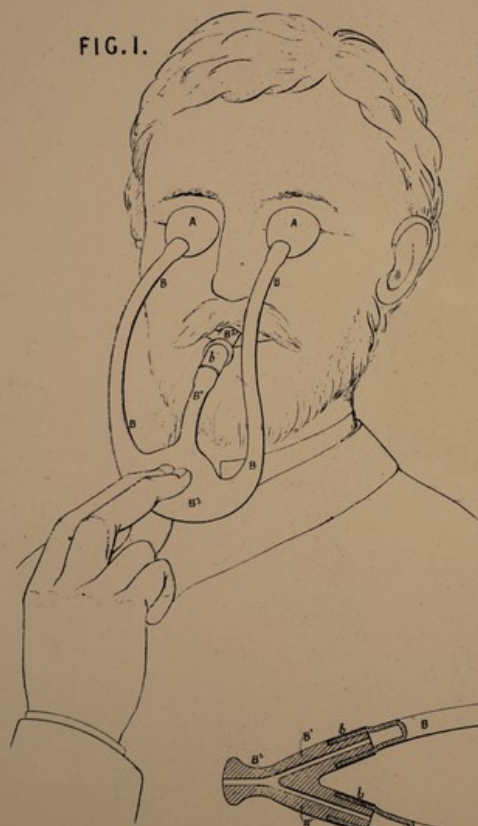


FIG. 1.

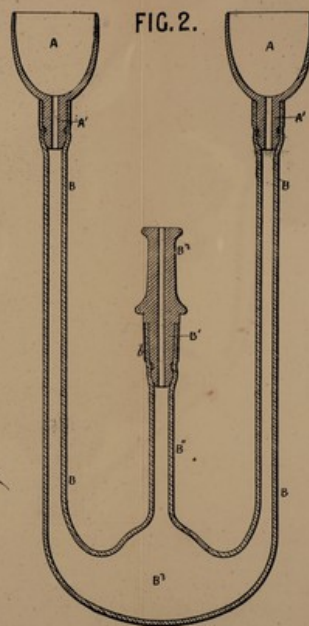


FIG. 2.

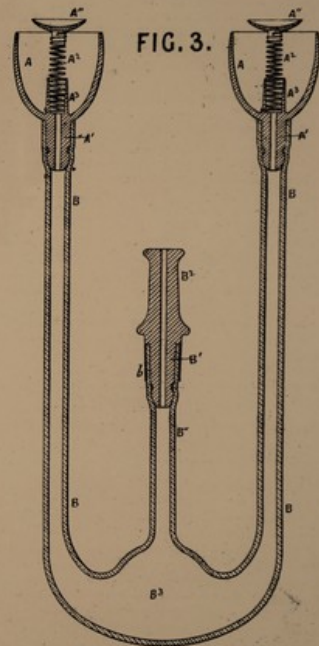


FIG. 3.

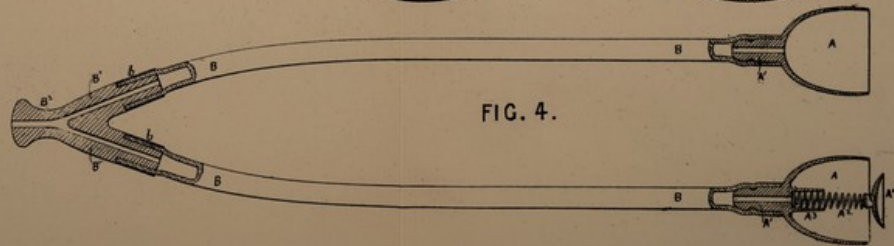


FIG. 4.

[This Drawing is a reproduction of the Original on a reduced scale.]

