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SPECIFICATION OF JOHN HENRY JOHNSON.

HATS, &c.

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LETTERS PATENT to John Henry Johnson, of 47 Lincolns Inn Fields in the County of Middlesex, Gentleman for an Invention of "IMPROVEMENTS IN THE MANUFACTURE OF HATS AND OTHER COVERINGS FOR THE HEAD AND IN MACHINERY OR APPARATUS FOR USE THEREIN" communicated to him from Charles Henry Willcox, of New York City in the County and State of New York, United States of America.

PROVISIONAL SPECIFICATION left by the said John Henry Johnson at the Office of the Commissioners of Patents on the 13th November 1883.

JOHN HENRY JOHNSON of 47 Lincolns Inn Fields in the County of Middlesex Gentleman "IMPROVEMENTS IN THE MANUFACTURE OF HATS AND OTHER COVERINGS FOR THE HEAD AND IN MACHINERY OR APPARATUS FOR USE THEREIN" a communication to me from Charles Henry Willcox of New York City in the County and State of New York United States of America.

This invention consists firstly in certain Improvements in attaching covered wire or its equivalent, as cord for example to the brims of hats or bonnets. The said improvements are more particularly designed for felt articles but are applicable in whole or in part to those of other materials to straw hats for example.

Heretofore covered wire has been stitched to hat brims by means of a sewing machine, the seam being run outside the wire between it and the edge of the brim. The necessary consequence is that the wire is some distance inside the said edge.

The first improvement consists in running the seam inside the wire or on the side of the wire away from the edge. In this way the wire is brought much closer to the edge than heretofore.

The second improvement consists in making the stitches pass obliquely through the brim, so that they pass out of the felt or other material into the covering of the wire or into the cord at the very edge itself, or if not at the edge yet very close thereto. The effect of this is that the wire or cord is or may be attached along the very edge to which it gives a finish and forms a protection, instead of being sewed in place under the body of the brim at a greater or lesser distance from the edge as heretofore.

The third improvement consists in bevelling the edge to which the wire or cord is to be secured. It enables the oblique stitches to have a stronger hold in the material of the brim than where the edge is left square. Beveling may also be resorted to where the stitching passes directly or perpendicularly through the fabric the object being to enable the wire or cord to be attached along, or as close as may be to the edge.

The hat, bonnet or other article of head wear, having a wire or cord stitched along the edge of the brim constitutes a new article of manufacture.

Heretofore the wire or cord has always been secured on the face of the brim at a greater or less distance from the edge. This new manufacture should be distinguished from hats or bonnets in which a cord or reed with its edged overlapping the brim on opposite sides thereof, the sewing being through the braid and the brim. In the present Invention the covered wire is substantially a cord with a metal core and is sewed directly to the brim.

This part of the Invention also comprises the new machinery for attaching the wire or cord to the brim in the manner setforth.

The Invention secondly consists in a device for cutting the felt or other suitable fabric on a bevel, so as to give a bevelled edge to the hat brim. The said device comprises in combination with the blade or blades of shears, scissors or other cutting apparatus means for bending the material to be cut so that the cutting edge of edges will act upon and sever the fabric obliquely to the surface.

The Invention thirdly consists in improvements in the tension apparatus of straw hat sewing machines. In sewing straw braids into hats and bonnets it is found desirable to have a heavier tension upon the thread in sewing the centre of tip than in sewing the outer circles. The object of the improvement is to enable the operator readily to effect the change from the heavier to the lighter tension and *vice versa*. The change may be effected with the ordinary tension apparatus, by turning the usual set screw or set nut, but the changing would take much of the Operator's time and it would be difficult to restore accurately the previous adjustment. The first improvement under this head consists in providing means additional to the ordinary adjusting devices, whereby the extra tension may be applied without altering the ordinary or normal adjustment – This improvement is applicable to tension apparatus in which the thread passes around a wheel or pulley which turns as the thread is drawn forward, and to which the friction is applied to produce the tension as well as to those which clamp the thread between disks or washers and produce the tension by pressure thereon ; –

This part of the Invention also comprises a second improvement applicable to the apparatus which produce tension by clamping the thread. It consists in combining with the tension disks or washers from turning by the drawing through of the thread but permitting the disks or washers or either of them to be turned by hand whenever the surface becomes worn by the thread.

In carrying the improvements constituting the first part of the Invention into effect, the bottom of the presser foot on the side away from the gooseneck is bevelled or inclined the bevel extending nearly to the line of seam and being about forty five degrees to the vertical. The top of the feed dog which is roughened and constitutes the feed surface and the top of the work rest are each inclined in the same manner and to the same extent. The work rest is notched or grooved vertically opposite the needle to permit the free passage of the said needle. When the presser foot is let down upon the work it clamps the hat brim in a position oblique to the line of reciprocation of the needle.

The work rest which takes the place of a throat plate and may of course be rigidly fastened to the cloth or work plate, may be attached to a plate which is attached to the work plate by a set screw. The groove constituting the wire guide is formed in the thickened end of the said plate, the extra thickness forming a tongue which fits within a hole in the cloth or work plate. The outer edge of the tongue and of the opening in the cloth or work plate are inclined to the line of feed. In the bottom of the groove are formed the needle hole and thread slot. – In front of the needle at the top of the groove are overhanging lips so that the slot or opening thereinto is less in width than the diameter of the groove. The said lips assist in retaining the wire in the groove into which it is sprung or pressed in starting the machine. The needle may be flattened on the inner or gooseneck side, so that the point is nearer that side than the other and the wire guide is arranged with the axis of the groove on the gooseneck side of the point so that the needle will penetrate the covering of the wire on the side away from the gooseneck.

The work guide is undercut near the bottom so that the upper part will project beyond the guiding edge. – In operation the upper part is adjusted close alongside of the needle but not in actual contact therewith. – If the needle in passing through the felt should be turned towards the wire in consequence of the longer bevel on the opposite side of the point, the needle makes contact with the said upper part and is prevented from bending sufficiently to strike the wire inside the covering.

The brim of a hat or bonnet has its edge cut on a bevel of about 45° (although the angle is not essential) inclining inward from the underside of the brim so that the thin edge is at the said underside. The covered wire to be attached is sprung into the groove and the brim placed above with its underside uppermost and the thin edge resting against the guiding edge of the work guide. The bevelled edge of the brim then rests upon the covered wire and the machine being started the needle pierces the hat brim, passing out of the felt about the middle of the bevelled edge and immediately penetrating the covering close alongside of the enclosed wire. The stitches thus attach the wire to the bevelled edge so that it forms a protection and finish to the brim.

If it be desired to attach a cord it is done in substantially the same manner, the needle after passing obliquely through the brim penetrating the cord at a suitable distance from the edge to get a secure hold.

The seam which is run through the wire covering or cord is in the article on the inside of the wire, or the same side with the body of the article.

The brim is attached to or made in one piece with the hat or bonnet in the ordinary or in any suitable way.

It is evident that modifications may be made in details without departing from the spirit of the Invention and also that one or more of the Improvements may be used separately. For example as described the needle does not pass through the thickness of the felt since it passes out before reaching the opposite side (underside as it is placed in the machine) and this is decidedly the best way and to accomplish it, is the principal object of the oblique stitching and the bevelling, but either or both of them may be resorted to in order to bring the seam near instead of on the edge. – The covered wire or cord may be attached to a brim with square edged by a seam inside the wire or axis of the cord by stitches which pass perpendicularly through the work.

A device for cutting on a bevel constructed in accordance with the second part of the Invention consists as follows. –

The shears or scissors are of ordinary construction, but a tipping piece is secured to one of the blades so as to project beyond the edge of said blade – The distance which the tipping piece projects beyond the cutting edge depends upon the width of the blade and the angle which it is desired to cut.

The tipping piece may be formed of various materials and shapes and be attached in a variety of ways.

For example it may be a brass plate which is set in a recess in the steel blade and is secured therein by soldering.

In use the blade provided with the said attachment is held down.

The principal object of the instrument is to bevel the edge of hat brims preparatory to wiring in the manner before described – For this purpose the brim is placed wrong side up, so that the under blade which carries the tipping piece is on the outer or right side of the brim.

Tension apparatus is constructed in accordance with the third part of the Invention as follows. –

There is support for the tension apparatus which may be a portion of the frame of the machine for sewing straw hats. There are also tension disks or washers upon central stud with a nut on

the upper split end of the said stud – An arched spring plate rests upon the outer tension disk or washer a cup surrounding the central stud just beneath the nut. A spiral compression spring surrounds the central stud and is enclosed in the cap and a cap surrounding it and capable of sliding thereover – Projecting from the support are the pins serving as thread guides. A screw is provided for preventing the central stud from turning, a nut engaging the lower split end of the central stud there being an arm or handle for turning the said nut.

The support is bored vertically for the passage of the central stud. It is hollowed on top to form an annular bearing for the inner disk or washer near the circumference thereof. At the bottom the bore is enlarged to receive the aforesaid central stud fastening screw.

The said central stud fits loosely within the support and opposite the said fastening screw is a groove into which the end of said screw extends so that the said stud is prevented from turning but is allowed a limited endwise movement.

The cap and the cup are free to move up and down and by turning the nut at the top of the stud the spring will be compressed to a greater or less degree so that the clamping action of the tension disks or washers upon the thread will be increased or diminished. The nut on the lower end of the stud prevents it from moving in either direction except as the said nut is turned in the proper direction by the handle attached thereto. The thread at the lower end of the stud is coarse so that a small turn allowed by the slot in which the handle moves gives a comparatively large endwise movement to the central stud and produces a corresponding effect in the compression of the spring. The thread on the upper end of the stud is on the contrary fine so that a nice adjustment may be made.

The arched plate or spring washer has bar which fits with the slit or slot in the upper end of the central stud and prevents the said plate or washer from turning. The friction between the tension disks or washers and the annular bearings of the arched plate or spring washer above and the support below prevents them from turning under the action of the thread which is passed around the pins.

When the clamping surfaces wear the disks or washers are shifted.

The normal tension is adjusted by turning the upper or thumb nut. The extra tension is put on or taken off by turning the lower nut by its handle.

Since the lower nut draws down the thumb nut along with the stud it is obvious that each adjustment of the said thumb nut alters the tension which the apparatus has when the stud is depressed as well as when it is raised. The tension may in fact be adjusted while the stud is depressed without moving the lower nut the handle thereof would ordinarily be moved the full length of its slot but it is not necessary so to do unless the full increase of the tension be desired.

The arrangement of the devices for producing the extra tension at the bottom of the stud is very convenient since they are then entirely out of the way and in nowise interfere with the threads or manipulation of the tension disks or washers.

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SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said John Henry Johnson in the Patent Office on the 12th May 1884.

JOHN HENRY JOHNSON of 47 Lincoln's Inn Fields in the County of Middlesex Gentleman "IMPROVEMENTS IN THE MANUFACTURE OF HATS AND OTHER COVERINGS FOR THE HEAD AND IN MACHINERY OR APPARATUS FOR USE THEREIN" a communication to me from Charles Henry Wilcox of New York City in the County and State of New York, United States of America.

This Invention consists firstly in certain improvements in attaching covered wire of its equivalent as cord for example to the brims of hats or bonnets. The said improvements are more particularly designed for felt articles but are applicable in whole or in part to those of other materials, to straw hats for example.

Heretofore covered wire has been stitched to hat brims by means of a sewing machine, the seam being run outside the wire, between it and the edge of the brim. The necessary consequence is that the wire is some distance inside the said edge.

The first improvement consists in running the seam inside the wire or on the side of the wire away from the edge. In this way the wire is brought much closer to the edge than heretofore.

The second improvement consists in making the stitches pass obliquely through the brim so that they pass out of the felt or other material into the covering of the wire or into the cord at the very edge itself or if not at the edge yet very close thereto. The effect of this is that the wire or cord is or may be attached along the very edge to which it gives a finish and forms a protection instead of being sewed in place under the body of the brim at a greater or less distance from the edge as heretofore.

The third improvement consists in bevelling the edge to which the wire or cord is to be secured. It enables the oblique stitches to have a stronger hold in the material of the brim than where the edge is left square. Bevelling may also be resorted to where the stitching passes directly or perpendicularly through the fabric, the object being to enable the wire or cord to be attached along or as close as may be to the edge.

The hat, bonnet, or other article of head wear, having a wire or cord stitched along the edge of the brim constitutes a new articles of manufacture.

Heretofore the wire or cord has always been secured on the face of the brim at a greater or less distance from the edge. This new manufacture should be distinguished from hats or bonnets in which a cord or reed is attached along the edge of the brim by a braid folded around the cord or reed with its edges overlapping the brim on opposite sides thereof, the sewing being through the braid and the brim. In the present invention the covered wire is substantially a cord with a metal core, and is sewed directly to the brim.

This part of the invention also comprises the new machinery for attaching the wire or cord to the brim in the manner set forth.

The Invention secondly consists in a device for cutting the felt or other suitable fabric on a bevel, so as to give a bevelled edge to the hat brim. The said device comprises in combination with the blade or blades of shears, scissors or other cutting apparatus, means for bending the material to be cut so that the cutting edge or edges will act upon and sever the fabric obliquely to the surface.

The Invention thirdly consists in improvements in the tension apparatus of straw hat sewing machines. In sewing straw braids into hats and bonnets it is found desirable to have a heavier tension upon the thread in sewing the centre or tip than in sewing the outer circles. The object of the improvement is to enable the operator readily to effect the change from the heavier to the lighter tension and *vice versa*. The change may be effected with the ordinary tension apparatus by turning the usual set screw or set nut, but the changing would take much of the operator's time and it would be difficult to restore accurately the previous adjustment. The first improvement under this head consists in providing means additional to the ordinary adjusting devices whereby the extra tension may be applied without altering the ordinary or normal adjustment. This improvement is applicable to tension apparatus in which the thread passes around a wheel or pulley which turns as the thread is drawn forward and to which the friction is applied to produce the tension, as well as to those which clamp the thread between discs or washers and produce the tension by the pressure thereon; but it will be shown herein as embodied in the latter form only. This part of the invention also comprises a second improvement applicable to the apparatus which produce tension by clamping the thread. It consists in combining with the tension discs or washers which are mounted on a stud, friction devices adapted to prevent the discs or washers from turning by the drawing through of the thread, but permitting the discs or washers or either of them to be turned by hand whenever the surface becomes worn by the thread.

The improvements constituting the first part of the Invention and the manner in which the same are or may be carried into effect are illustrated in Figures 1 to 7 of the accompanying drawings.

Figure 1 is a front elevation of a machine constructed in accordance with the Invention. Figure 2 a perspective and front view of the feed dog or piece on which the feed surface is formed. Figure 3 a perspective of the grooved wire guide and work rest. Figure 4 a top and a bottom perspective of the presser foot. Figure 5 a vertical section through the needle and guides transverse to the line of feed showing the hat brim and covered wire in place. Figure 6 a

perspective of a part of a hat brim with the covered wire attached and Figure 7 a perspective of part of a hat brim with a cord attached. The machined shown is the hat sewing machine manufactured by the Willcox and Gibbs Sewing Machine Company and need not be particularly described.

A is the cloth or work plate. B the work guide, C a plate which carries the wire guide D and work rest E. F the feed dog, G the presser foot and H the needle. The bottom of the presser foot on the side away from the gooseneck is bevelled or inclined, the bevel extending nearly to the line of seam and being about forty five degrees to the vertical. The top of the feed dog F which is roughened and constitutes the feed surface and the top of the work rest E are each inclined in the same manner and to the same extent. The work rest is notched or grooved vertically opposite the needle to permit the free passage of the said needle. When the presser foot is let down upon the work it clamps the hat brim in a position oblique to the line of reciprocation of the needle.

The work rest E which takes the place of a throat plate and may of course be rigidly fastened to the cloth or work plate, is shown attached to the plate C which is attached to the work plate by a set screw *a*. The groove constituting the wire guide is formed in the thickened end of the plate C, the extra thickness forming a tongue and of the opening in the cloth or work plate are inclined to the line of feed. In the bottom of the groove are formed the needle hole and thread slot. In front of the needle at the top of the groove are overhanging lips *b*, so that the slot or opening thereinto is less in width than the diameter of the groove. The lips *b* assist in retaining the wire in the groove into which it is sprung or pressed in starting the machine. The needle H is flattened on the inner or gooseneck side, so that the point is nearer that side than the other and the wire guide is arranged with the axis of the groove on the gooseneck side of the point so that the needle will penetrate the covering of the wire on the side away from the gooseneck.

The work guide B is undercut near the bottom so that the upper part *c* will project beyond the guiding edge *d*. In operation the upper part *c* is adjusted close alongside of the needle but not in actual contact therewith. If the needle in passing through the felt should be turned towards the wire in consequence of the longer bevel on the opposite side of the point, the needle makes contact with the part *c* and is prevented from bending sufficiently to strike the wire inside the covering.

The operation will be readily understood by reference to Figure 5. The brim K of a hat or bonnet has its edge cut on a bevel of about 45 degrees (although the angle is not essential) inclining inward from the underside of the brim so that the thin edge is at the said underside. The covered wire L to be attached is sprung into the groove D and the brim placed above with its underside uppermost and the thin edge resting against the guiding edge *d* of the work guide B. The bevelled edge of the brim then rests upon the covered wire and the machine being started the needle pierces the hat brim passing out of the felt about the middle of the bevelled edge and immediately penetrating the covering close alongside of the enclosed wire. The stitches thus attach the wire to the bevelled edge so that it forms a protection and finish to the brim.

If it be desired to attach a cord it is done in substantially the same manner, the needle after passing obliquely through the brim penetrating the cord at a suitable distance from the edge to get a secure hold.

The seam which is run through the wire covering or cord is in the article on the inside of the wire or same side with the body of the article.

In Figures 6 and 7 only the brim is shewn. It is attached to or made in one piece with the hat or bonnet in the ordinary or in any suitable way.

It is evident that modifications may be made in details without departing from the spirit of the invention and also that one or more of the improvements may be used separately. For example, as described, the needle does not pass through the thickness of the felt, since it passes out before reaching the opposite side (underside as it is placed in the machine) and this is decidedly the best way and to accomplish it is the principal object of the oblique stitching and the bevelling; but either or both of them may be resorted to in order to bring the seam near, instead of on the edge. The wire guide with the lips at the top to retain the wire in the groove is believed to be new. It is not, however, necessary to employ it unless desired as the machine would be operative without it. It is preferred to use the centre pointed needle with one side cut away or flattened as before described, but its use while considered an improvement in attaching wire is not essential, as covered wire can be practically attached with the ordinary centre pointed needle, as well as with the needle having the point in the plane of one of its sides. The covered wire or cord may be attached to a brim with square edges by a seam inside the wire or axis of the cord by stitches which pass perpendicularly through the work.

A device for cutting on a bevel constructed in accordance with the second part of the invention is illustrated in Figures 8, 9 and 10 of the accompanying drawings, Figures 8 and 9 being side views of the device and Figure 10 a cross section of the blades.

The shears or scissors are of ordinary construction, but a tipping piece A is secured to one of the blades B so as to project beyond the edge of blade B. The distance to which the tipping piece projects beyond the cutting edge depends upon the width of the blade and the angle which it is desired to cut. As shewn, the tipping piece projects about one twenty fourth part of an inch and the cutting edge is about one thirty second of an inch distant from the nearest point of the tipping piece.

The tipping piece may be formed out various materials and shapes and be attached in a variety of ways. As shown it is in the form of a brass plate which is set in a recess in the steel blade and is secured therein by soldering. In use the blade B is held down.

The principal object of the instrument is to bevel the edge of hat brims preparatory to wiring in the manner before described. For this purpose the brim is placed wrong side up so that the under blade B which carries the tipping piece is on the outer or right side of the brim.

Figures 11 to 14 represent a tension apparatus constructed in accordance with the third part of the Invention, Figure 11 being an elevation, Figure 12 a section, Figure 13 a plan and Figure 14 a separate plan of one of the parts.

A is the support for the tension apparatus, being as shewn a portion of the frame of the machine for sewing straw hats. B C are the tension discs or washers, D the central stude, E a nut on the upper split end of said stud – F the arched spring plate resting upon the outer tension disc or washer B – G a cup surrounding the central stud just beneath the nut E. I a spiral compression spring surrounding the central stud and enclosed in the cup G and Cap H. K the pins serving as thread guides. L a screw for preventing the central stud from turning. M a nut engaging the lower split end of the central stud, and N an arm or handle for turning the nut M.

The support A is bored vertically for the passage of the central stud D. It is hollowed on top to form an annular bearing for the inner disc or washer C near the circumference thereof. At the bottom the bore is enlarged to receive the nut M and a slot is cut through the enclosing wall on one side for the reception of the handle N. A hole is made above this slot to receive the screw L.

The stud D fits loosely within the support A and opposite the screw L is a groove (shown in dotted lines in figure 12) into which the end of said screw extends so that the said stud is prevented from turning but is allowed a limited endwise movement.

The cap H and the cup G are free to move up and down and by turning the nut E the spring I will be compressed to a greater or less degree so that the clamping action of the tension discs or washers upon the thread will be increased or diminished. The nut M on the lower end of the stud prevents it from moving in either direction except as the said nut is turned in the proper direction by the handle N which as shown is tapped into the side of the nut. The thread at the lower end of the stud is coarse so that a small turn allowed by the slot in which the handle N moves gives a comparatively large endwise movement to the central stud and produces a corresponding effect in the compression of the spring. The thread on the upper end of the stud is on the contrary fine so that a nice adjustment may be made.

The arched plate or spring washer has a bar which fits with the slit or slot in the upper end of the central stud and prevents the said plate or washer from turning. The friction between the tension discs or washers and the annular bearings of the arched plate or spring washer above and the support A below prevents them from turning under the action of the thread (which is passed around the pins as shewn in Figure 13). When the clamping surfaces wear, the discs or washers are shifted.

The normal tension is adjusted by turning the upper nut or thumb nut E. – The extra tension is put on or taken off by turning the lower nut M by its handle N. Since the nut M draws down the thumb nut E along with the stud D it is obvious that each adjustment of the said thumb nut alters the tension which the apparatus has when the stud is depressed as well as when it is raised. The tension may in fact be adjusted while the stud is depressed without moving the nut M; the

handle N would ordinarily be moved the full length of its slot but it is not necessary so to do unless the full increase of the tension be desired.

The arrangement of the devices for producing the extra tension at the bottom of the stud is very convenient since they are then entirely out of the way and in no wise interfere with the threads or manipulation of the tension discs or washers.

Having now described and particularly ascertained the nature of the said Invention and the manner in which the same is or may be used or carried into effect I would observe in conclusion that what I consider to be novel and original and therefore claim as the Invention secured to me by the hereinbefore in part recited Letter Patent is.

First: – The sewing of covered wire or cord to brims of hats and other articles of head wear by running a seam through the brim and the covering of the wire, or the cord, inside the wire, or axis of the cord, that is on the side away from the edge of the hat or other article substantially as hereinbefore described.

Second: – Attaching the cord or covered wire by oblique stitching as hereinbefore set forth.

Third: – Bevelling the edge of the brim and attaching the wire or cord to the bevelled edge substantially as hereinbefore described.

Fourth: – Bevelling the edge of the brim and attaching the wire or cord by oblique stitches to the said brim substantially as hereinbefore described.

Fifth: – A hat or other article of head wear having a wire or cord attached to the brim along the edge thereof in the manner hereinbefore described so as to constitute a finish and protection to said edge.

Sixth: – The machinery for stitching obliquely through the edge of the hat brim substantially as hereinbefore described.

Seventh: – The combination with the sewing mechanism, of the wire guide inclined work rest, and inclined presser foot, substantially as hereinbefore described.

Eighth: – The work guide arranged to form a bearing to the needle having an eccentric point substantially as hereinbefore described.

Ninth: – The grooved wire guide having the inwardly projecting lips to retain the wire in the groove substantially as hereinbefore described.

Tenth: – The device for cutting on a bevel, comprising one or more tipping pieces in combination with a cutter or cutters substantially as hereinbefore described.

Eleventh: – The employment in connection with the adjusting means of a tension apparatus, of additional devices for imparting an extra tension without altering the adjustment of the aforesaid means substantially as hereinbefore described.

Twelfth: – The arrangement whereby the support or carrier for the customary adjusting means is moved to impart the extra tension substantially as hereinbefore described.

Thirteenth: – In a tension apparatus having discs or washers mounted on a stud, the means for applying friction to the said discs or washers or either of them near the circumference thereof so as to prevent the same from turning under the action of the thread drawn between them substantially as hereinbefore described.

In witness whereof I the said John Henry Johnson have to the my Specification set my hand and seal this ninth day of May One thousand eight hundred and eighty four.

J. HENRY JOHNSON (L.S.)

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