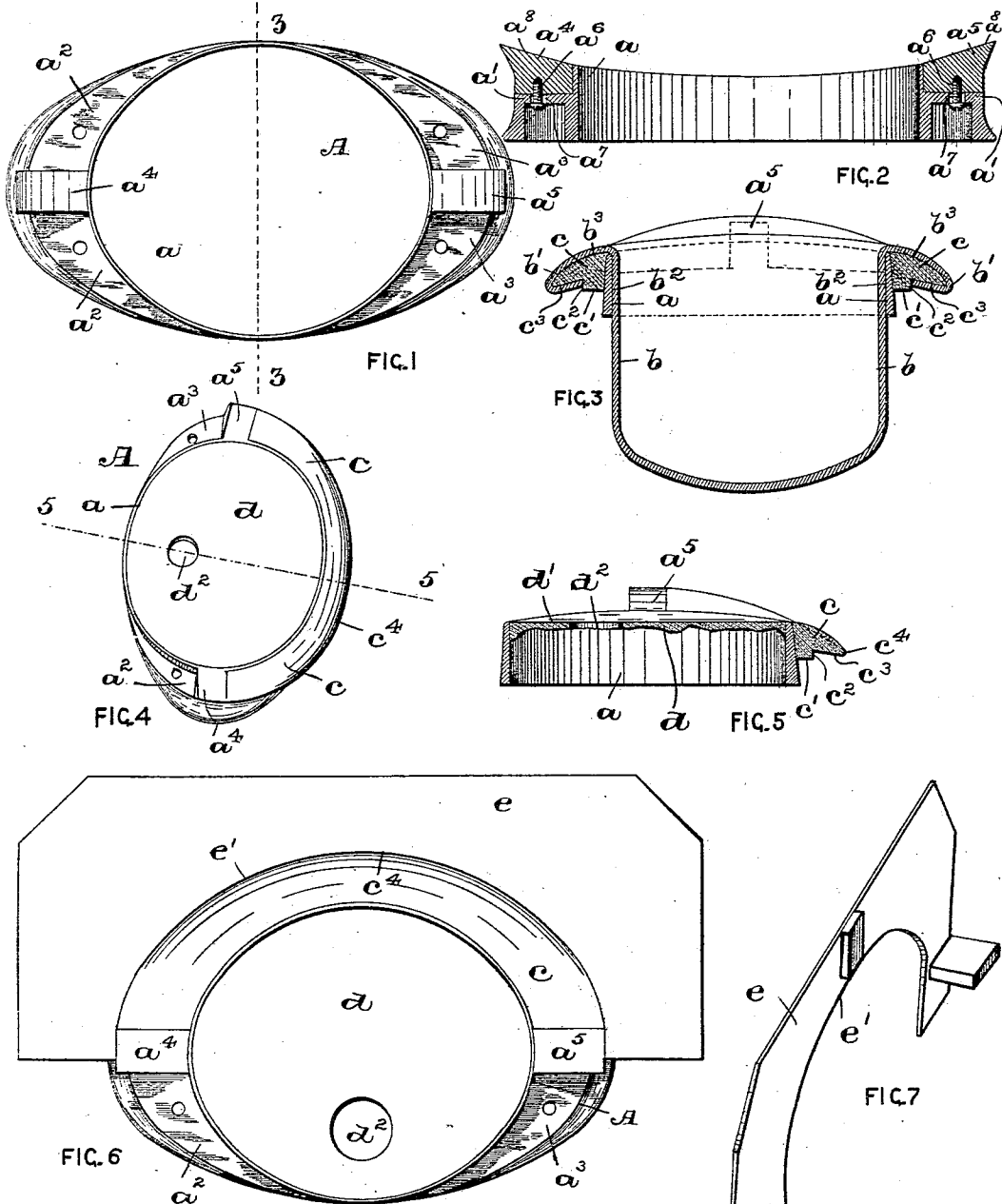


F. L. BUTTERWORTH.
FLANGE FOR SHAPING HAT BRIMS.

No. 559,930.

Patented May 12, 1896.



WITNESSES:

Wm. H. Crawford, Jr.
E. Basil Hooper.

INVENTOR:

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BY

Fred C. Fraentzel,
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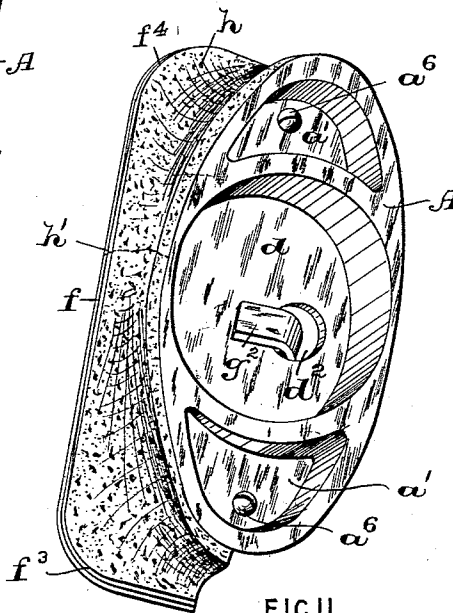
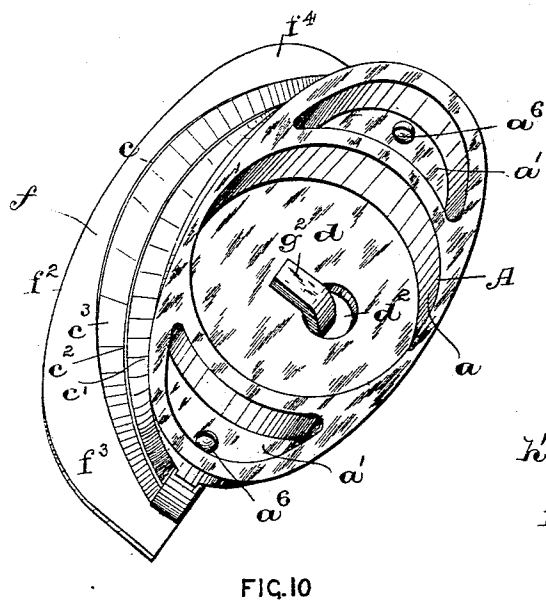
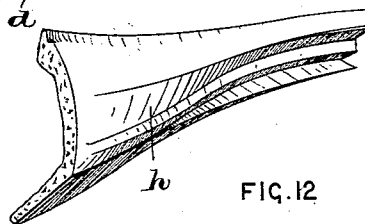
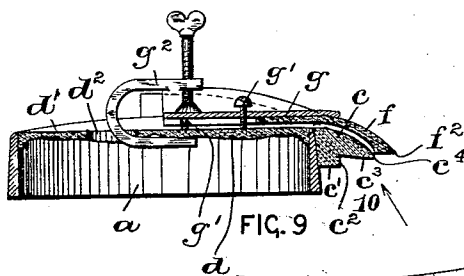
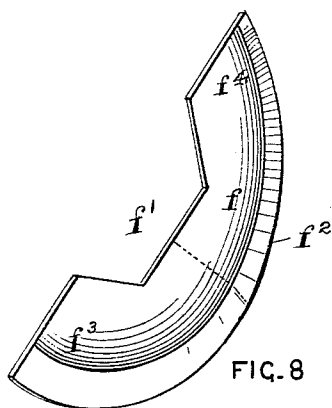
(No Model.)

3 Sheets—Sheet 2.

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WITNESSES:

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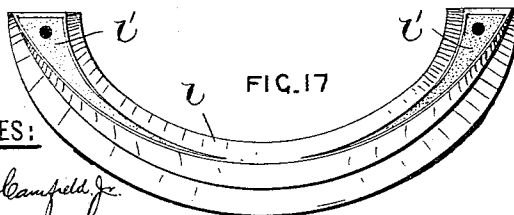
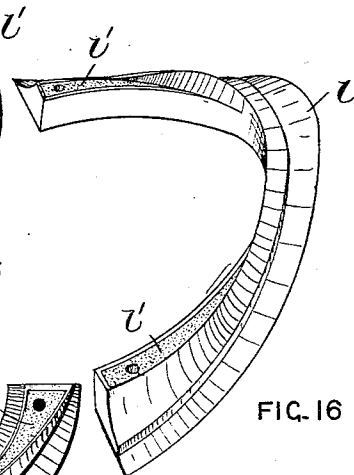
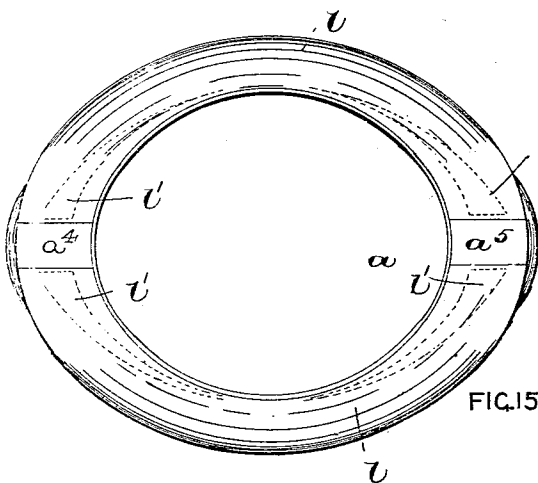
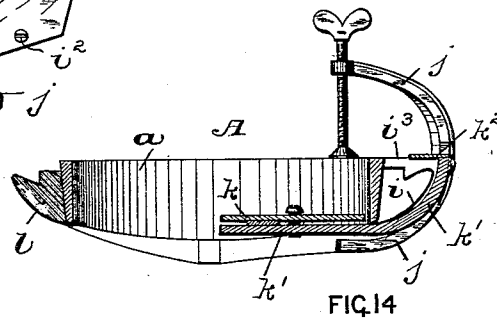
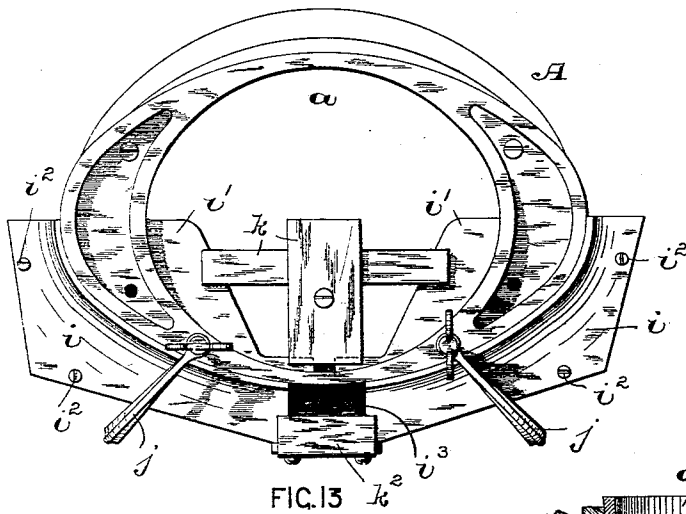
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WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK L. BUTTERWORTH, OF NEWARK, NEW JERSEY.

FLANGE FOR SHAPING HAT-BRIMS.

SPECIFICATION forming part of Letters Patent No. 559,930, dated May 12, 1896.

Application filed February 15, 1895. Serial No. 538,472. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. BUTTERWORTH, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hat-Brim-Shaping Flanges; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to novel improvements in devices for curling and shaping hat-brims and method of making same; and the invention therefore consists in the construction of hat-brim-shaping flange and the combination thereof with certain other parts of mechanism used in the manufacture of hats.

In the accompanying drawings, Figure 1 is a plan view of a certain metallic frame having pitch-pieces at the two ends, either permanently or detachably arranged on said frame. Fig. 2 is a longitudinal vertical section of the said frame and its pitch-pieces. Fig. 3 is a cross-section taken on line 3 3 in Fig. 1, illustrating in section the arrangement of a hat-body in the said metallic frame and the space between the metallic frame and the hat-brim filled with a plastic material. Fig. 4 is a perspective view of the said frame and the plastic material molded thereon, illustrating its arrangement on said frame after the hat-body has been removed and with the inner portion of the metallic frame filled in with a layer of plastic material. Fig. 5 is a cross-section of the said frame and parts connected therewith, said section being taken on line 5 5 in Fig. 4. Fig. 6 is a plan view of the same parts with a molding-board used in connection therewith, and Fig. 7 is a perspective view of the said board. Fig. 8 is a perspective view of the under side of a layer of plaster-of-paris or other plastic material employed in the different steps of the invention, and Fig. 9 is a view similar to that illustrated in Fig. 5 with said layer shown in Fig. 8 in position and a certain metallic plate and clamping means used in connection therewith to

give the layer of plastic material shown in Fig. 8 the desired thickness before it has set. Fig. 10 is a perspective view of the several parts illustrated in Fig. 9 when looking in the direction of the arrow 10 in said Fig. 9. Fig. 11 is a similar view of the parts illustrated in Fig. 10 with a certain peculiarly-shaped mold formed from plastic material molded thereon, and Fig. 12 is a perspective view of part of the said mold when detached to be used as a pattern. Fig. 13 is a plan view of the metallic frame with certain metallic pieces secured thereon to form a complete mold for forming the metal hat-brim-shaping flange. Fig. 14 is a cross-section of the mold illustrated in Fig. 13. Fig. 15 is a top view of the metallic frame, with the metallic hat-brim-shaping flanges thereon, after the metallic pieces made from the plaster-of-paris patterns or molds have been removed. Fig. 16 is a perspective, and Fig. 17 a bottom view, of one of said metallic hat-brim-shaping flanges.

Similar letters of reference are employed to indicate corresponding parts in the several figures.

A designates a suitable metal frame, which is formed with an opening *a* of the shape and contour of the ordinary stiff hat, and is provided with a surrounding flange or shoulder *a'*, forming the offsets *a²* and *a³*, as will be clearly seen from Fig. 1. At the opposite ends of the frame A, and secured on the said flange or shoulder *a'*, are two end pieces *a⁴* and *a⁵*. One way of securing the end pieces to said flange or shoulder is by means of suitable screws *a⁶*, which are passed through holes *a⁷* in said flange, and which are screwed into the end pieces, as clearly shown; but they may be secured in any other well-known manner. The said end pieces *a⁴* and *a⁵* are upwardly inclined, as at *a⁸*, the pitch of these surfaces varying according to the different styles of hat-brims to be formed.

I will now describe the different steps in the method of making the plaster-of-paris or other like patterns, from which the metallic pieces are cast, to be finally used as mold-sections for forming the metallic hat-brim-shaping flanges illustrated in Figs. 15, 16, and 17.

A hat-body *b* is first made by hand or otherwise, and provided with a brim *b'*, which has been suitably curled according to the shape

of hat desired. The hat-body is then arranged in the opening a of the frame A , as clearly illustrated in Fig. 3, in such a manner that its surrounding surface b^2 snugly fits the inner contour of the opening a , and its rim b' extends around the outer and upper edge of the frame A and directly above the offsets a^2 and a^3 . The space b^3 beneath the brim of the hat and the surrounding surface of the frame A is then filled with a suitable plastic material—such as plaster-of-paris—of such consistency that it can be easily forced in place and readily molded into the proper shape desired, thereby producing the plaster-of-paris or other like mold c . When the plastic material has sufficiently set, the surface c' of the same, just below the curl of the brim, is cut away with a knife or other suitable instrument or otherwise trimmed off and the hat-body b is removed, leaving the plaster-of-paris mold c on the one half of the frame A of the shape shown more particularly in Fig. 4 and of the cross-section illustrated in Fig. 5. The edges and surfaces c^2 and c^3 are then smoothed off and trimmed down by means of a knife or other suitable instrument to the shape desired. After this has been accomplished, a layer of plastic material, as d , of plaster-of-paris or other like material, is formed in the upper part of the opening a in the frame A . When the upper surface d' of the layer d has been rendered perfectly smooth and allowed to set, a hole d^2 is formed therein, and the mold c , as well as the surface d' , is varnished and covered with oil or grease, as vaseline or the like. The frame A and the mold c and the layer d , formed in said frame, are then placed on a suitable table, with the mold c and the surface d' of the layer d turned upwardly. A flexible molding-board e , cut away, as at e' , to the shape or contour of the mold c , is next placed on the table or working bench in such a manner that the edge e' of said board e fits snugly against the outer edge c^4 of the mold c , as clearly represented in Fig. 6. The said board e being made of thin sheet metal—such as tin—can be readily bent into the desired shape, as will be clearly evident. On the other hand, however, said board may be made of wood and its upper surface properly curved, in order that its rim or edge e' will fit snugly around the edge of the said mold or pattern c . When this has been done, I next run plaster-of-paris or other like plastic material over the entire surface, the material being of such consistency that it will just run. The soft material is then smoothed down by hand or a proper tool to form the plaster-of-paris shield f . (Shown in Fig. 8.) I cut away a portion of f to form a recess, as f' , remove the board e , and place a suitable metal plate g , which is of a shape corresponding to the recess f' of the shield f , in position over said cut-away portion, said plate g being slightly larger than said cut-away portion in order that it will overlap the edges of said recess f' . Said plate is provided

with adjusting-screws g' , and when it is gently forced down upon the soft layer of plastic material f the said material is compressed to the desired thickness, regulated by the projecting portions of said screws g' beneath said plate g , as will be clearly understood from an inspection of Fig. 9. After the plastic material forming the shield f has set and the edges f^2 of said plate or shield f have been cut in the manner shown in Fig. 8, in order, that when the shield is placed on the mold or pattern c , previously formed, it has two parts f^3 and f^4 , which extend considerably beyond the surrounding edge of the mold c , as will be seen from Fig. 10. As has been stated, the mold or pattern c and the surface d' of the layer d in the opening in said frame A have been greased or oiled to enable the shield f to be readily removed. After said shield has been made, in the manner just described, it is also provided with a coat of oil or grease. The next step is to place said shield f back in its former position on the surface d' and over the top of the mold or pattern c , still using the plate g , and then securing the parts together by means of a suitable clamp g^2 , as clearly shown in Fig. 9. Said clamp is passed through the hole or opening d^2 in the layer d , which permits of the parts being readily secured together. After these parts have thus been secured together I form on the extending portions f^3 and f^4 of the shield f and over the mold c on the frame A , up to the surrounding edge of the said frame, plaster-of-paris or other like plastic material h , as will be clearly seen from Fig. 11. After this material has sufficiently set, all the parts are removed from the frame A , and said part or mold h , being sawed or cut on the line h' , will form a right and left pattern of the shape and form illustrated in Fig. 12, which are to be used in the manner to be described hereinafter. The shield f is also cut into two pieces on the dotted line indicated in Fig. 8, and the said plaster-of-paris patterns f and h are molded in sand in the usual manner, and when removed therefrom molten metal is poured into the mold to form the metal portions i and i' , which can be united or secured together by means of suitable screws or rivets i^2 , as clearly illustrated in Fig. 13. The mold portions are now arranged on one side of the frame A , as shown, or two sets may be used, one for each half of the frame, and these are held in position around the outer surface of the frame A by means of suitable clamps j or any other fastening devices. As will be seen from said Fig. 13, when the said mold-sections i and i' are placed in position against the frame A they do not meet in the center, but form an opening i^3 , which is used as a pouring-gate. In order to close the bottom of said opening i^3 , I secure against the said mold-sections and the frame A , by means of any suitable clamping device, as k , (see Figs. 13 and 14,) a curved plate k' , provided with the projection k^2 at

the top. By the employment of this device I am enabled to close up said opening at the bottom and side, providing an opening in the top which can be used as a pouring-gate. Of course it will be understood that before the metal mold-sections *i* and *i'* are secured together by means of the screws or rivets *i²* they are cleaned up and polished on the inside, so that the metal hat-brim-forming flanges to be cast therein on said frame A will be as nearly perfect as possible.

The finished hat-brim-shaping flanges *l* are clearly illustrated in Figs. 15, 16, and 17. They consist, essentially, of a composition of type and Babbitt metal or other easily-fusible metal, which is poured into the said opening *i³* between the two mold-sections shown in Figs. 13 and 14 and can be readily removed from the frame A when the mold-sections *i* and *i'* are removed, or said flanges *l* may be cast directly on said frame A to form a part thereof, as will be clearly evident.

In order to avoid the use of too great a quantity of the type or other fusible metal employed to make the flanges *l*, I may secure suitable iron or other like cores *l'* on the flange of the frame A, and when the soft metal is poured into the mold formed said cores *l'* will become embedded in the ends of said metal flanges *l*, as will be clearly seen from Figs. 16 and 17.

From the above description of the present invention it will be readily understood that the said flanges *l* are easily and quickly made, and when of no further use can be melted over and the metal used to form other flanges. It will also be clear that one set of mold-sections *i* and *i'* can be used on the different sizes of frames A, corresponding to the different sizes of hats to be made, said sections *i* and *i'*, when in their positions on the different frames, being closer together or farther apart at the middle of the frame, to make a small or a large pouring-gate, according to the size of frame A employed. When the plaster-of-paris patterns *f* and *h* have once been used in the sand to form the mold in which the metal sections *i* and *i'* are cast, the said plaster-of-paris patterns can be destroyed. Thus it will be readily seen that I have dispensed with the making of wooden patterns, which are expensive and in this case are tedious to make.

Having thus described my invention, what I claim is—

1. In combination with a metallic frame, as A, a mold *c*, of a plastic material, surrounding said frame, a shield *f* above said mold *c* and extending over the frame A, and a mold *h*, formed over said shield *f* and the said mold

c, substantially as and for the purposes set forth.

2. In combination with a metallic frame, as A, having a central opening and a filling *d*, of plastic material in said opening, a mold *c*, of plastic material, surrounding said frame, a shield *f* above said mold *c* and extending over the frame A, and a mold *h*, formed over said shield *f* and the said mold *c*, substantially as and for the purposes set forth.

3. In the art of making flanges for shaping hat-brims, the combination, with a frame A, having a surrounding flange or shoulder *a'* and the end pieces *a⁴* and *a⁵*, forming suitable offsets on the opposite sides of said end pieces, mold-sections *i* and *i'*, and means for securing said sections together, whereby the curved edges of the sections *i* embrace the outer edge of the frame A, and the plates *i'* extend over the said frame, and means for securing said sections against the frame, to form a mold, substantially as and for the purposes set forth.

4. In the art of making flanges for shaping hat-brims, the combination, with a frame A, having a surrounding flange or shoulder *a'* and the end pieces *a⁴* and *a⁵*, forming suitable offsets on the opposite sides of said end pieces, mold-sections *i* and *i'*, and means for securing said sections together, whereby the curved edges of the sections *i* embrace the outer edge of the frame A, and the plates *i'* extend over said frame, and means for securing said sections against the frame, to form a mold, consisting essentially of a plate *k'* secured against the mold-sections *i'*, an upwardly-extending projection *k²* on said plate, and clamps *j*, substantially as and for the purposes set forth.

5. In combination, with a frame A having an opening *a* and a surrounding flange or shoulder *a'* forming offsets *a²* and *a³*, of the herein-described hat-brim-shaping sections *l*, having cores *l'*, and means for securing said sections on said offsets, substantially as and for the purposes set forth.

6. In combination, with a frame A having an opening *a* and a surrounding flange or shoulder *a'* forming offsets *a²* and *a³*, of the herein-described hat-brim-shaping section *l*, made of type or Babbitt metal, having cores *l'*, and means for securing said sections on said offsets, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 1st day of February, 1895.

FRANK L. BUTTERWORTH.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.