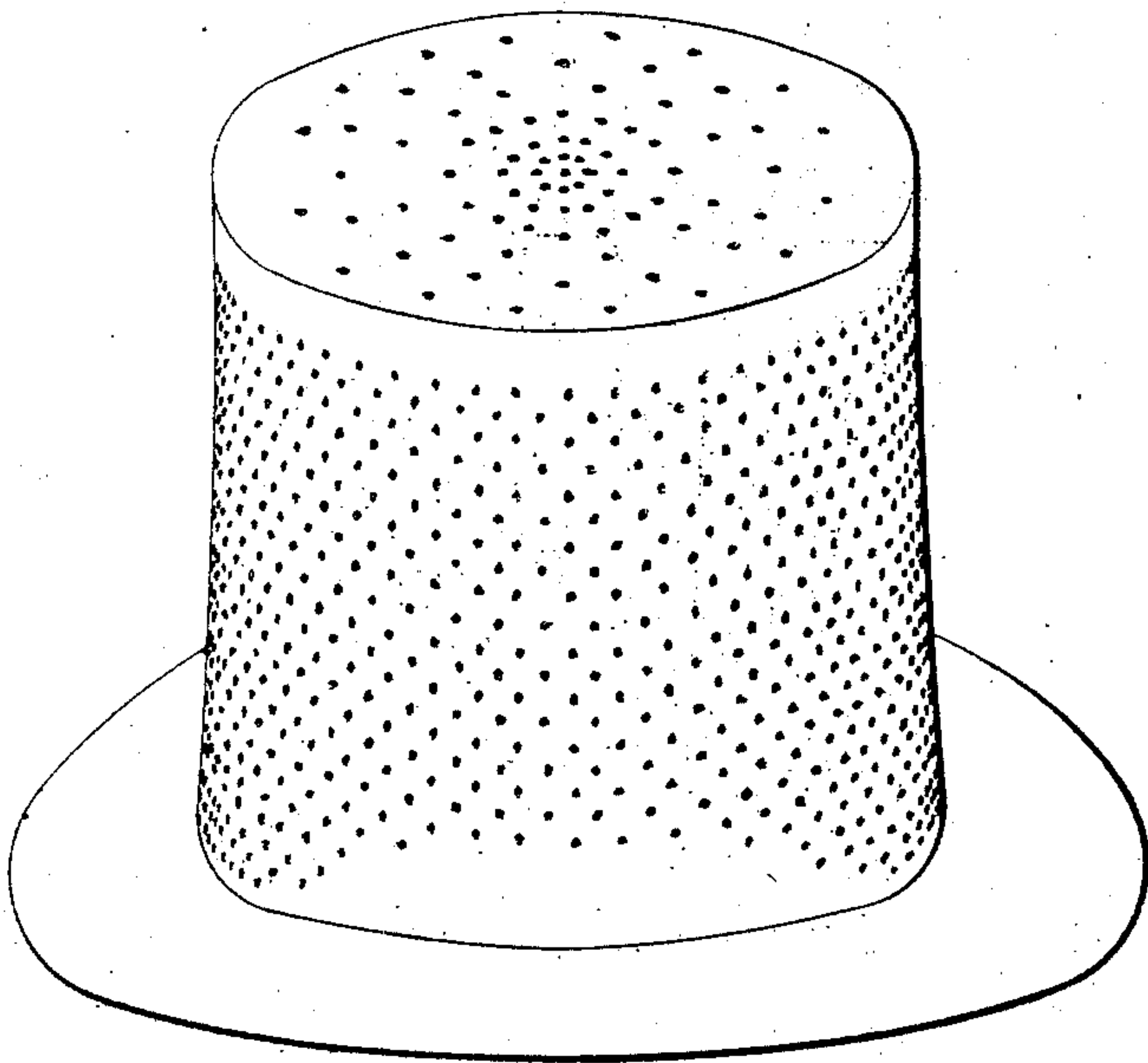


*W. F. Warburton,  
Ventilator.*

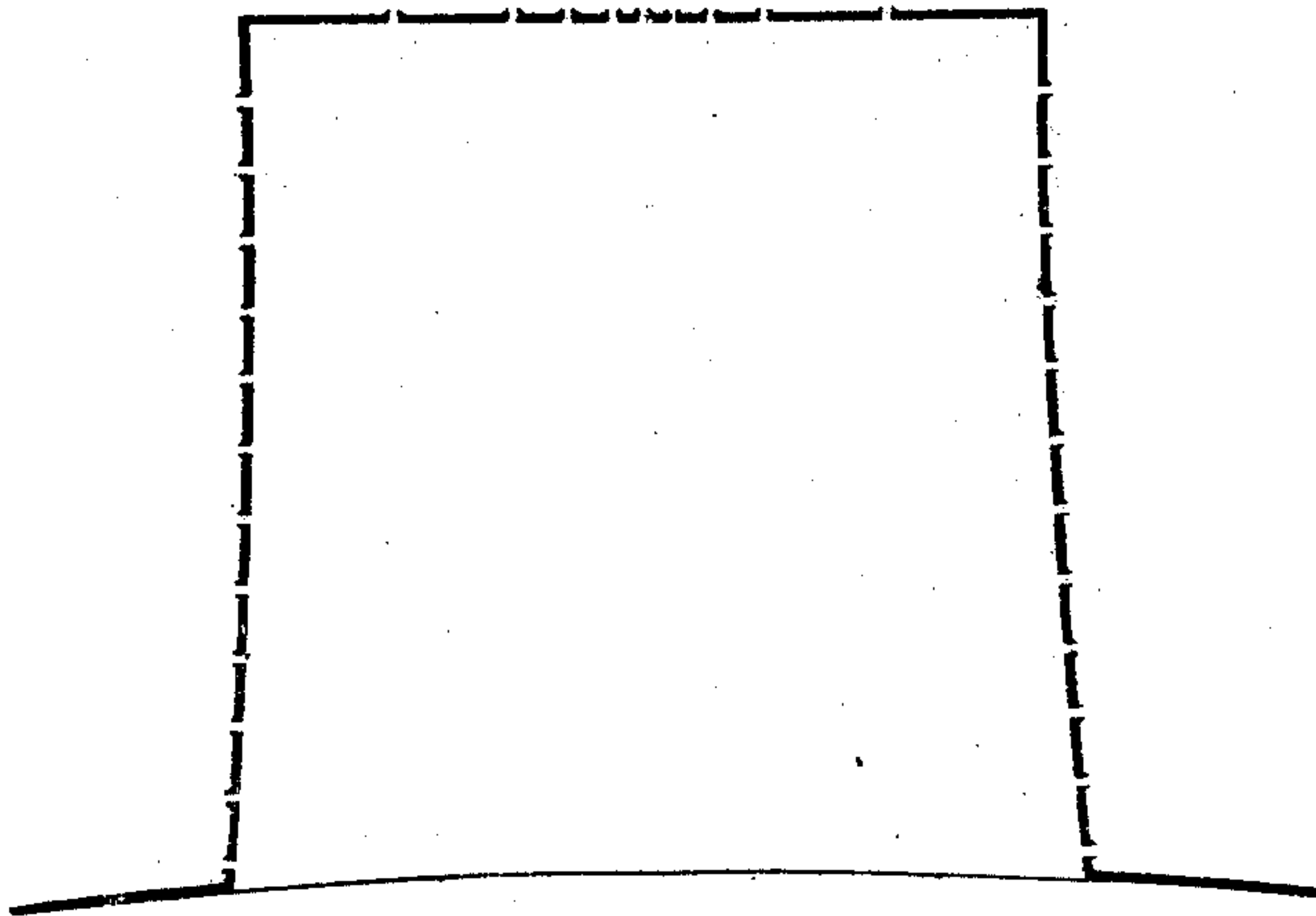
*No. 24,968.*

*Patented Aug. 2, 1859.*

*— Fig. 1. —*



*— Fig. 2. —*



Witnesses {

*Henry Howton*  
*Horace Siv*

*William F. Warburton*

# UNITED STATES PATENT OFFICE.

WILLIAM F. WARBURTON, OF PHILADELPHIA, PENNSYLVANIA.

## MANUFACTURE OF HATS.

Specification of Letters Patent No. 24,968, dated August 2, 1859.

*To all whom it may concern:*

Be it known that I, W. F. WARBURTON, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Hats; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to a process of perforating that class of hats the bodies of which are stiffened with a cement or gum of such a character that it readily melts on the application of heat, and my invention consists in perforating hats of this description by means of metal points heated to such a degree that as they pass through the material they will melt the stiffening with which the hats are prepared, thus making a clear opening which will not close on the withdrawal of the points and leaving a strong edge to the orifice thereby avoiding the weakening of the hat which is the result of the perforations made by punches or by cold metal points.

In order to enable others skilled in the art, to practice my improved manufacture, I will now proceed to describe how it may be carried into effect.

On reference to the accompanying drawing which forms a part of this specification—Figure 1 is a perspective view of a stiffened hat body perforated by means of my improved process. Fig. 2 is a vertical section of Fig. 1.

The bodies of hats are generally saturated for stiffening purposes, in gum shellac, or other resinous gums, thus filling up the pores so as to exclude both air and moisture and consequently preventing a free ventilation.

The ordinary silk hats are especially air tight owing to the entire surface being covered with a sizing of glue and a varnish of resinous gum prior to the application of the plush covering which is made under heat and pressure.

The usual mode of perforating the bodies of hats is either by punching pieces out or by puncturing them with sharp points. In the former case it is evident that the body of the hat will be weakened by being de-

prived of much of its substance, and deteriorated as regards durability and the retention of its proper shape.

When points are used to puncture the perforations the latter are apt to become closed and thus cease to perform the duty intended. In puncturing with points it is usual in some instances to cut off the projecting portions of the material, made by the points, so as to prevent these portions from returning to their original positions and closing the perforation. By thus cutting away the projecting portions, the body of the hat will be weakened to an extent equal to that caused by punching pieces completely out. I puncture the required holes with metal points maintained at a suitable heat so that when they penetrate the body of the hat the resinous gum stiffening may be melted and the possibility of the holes closing after the withdrawal of the points, thereby prevented.

The bodies of silk hats may be thus perforated prior to the application of the plush covering as the latter is of so open a texture as to afford little or no obstruction to the free passage of air through the perforations.

It will be evident that not only must the closing of the holes after the withdrawal of the points be prevented by my process, but that the stiffening partially melted during the penetration of the points, will, on their withdrawal congeal and form a hard solid ring around the edge of every orifice thereby strengthening the entire body and thus counteracting the weakness caused by the perforations.

I make no general or broad claim to the manufacture of perforated hats well knowing the same to be old, but

I claim and desire to secure by Letters Patent:

The process herein described of perforating the bodies of hats by means of heated metal points for the purpose specified.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM F. WARBURTON.

Witnesses:

HENRY HOWSON,  
CHARLES D. FREEMAN.