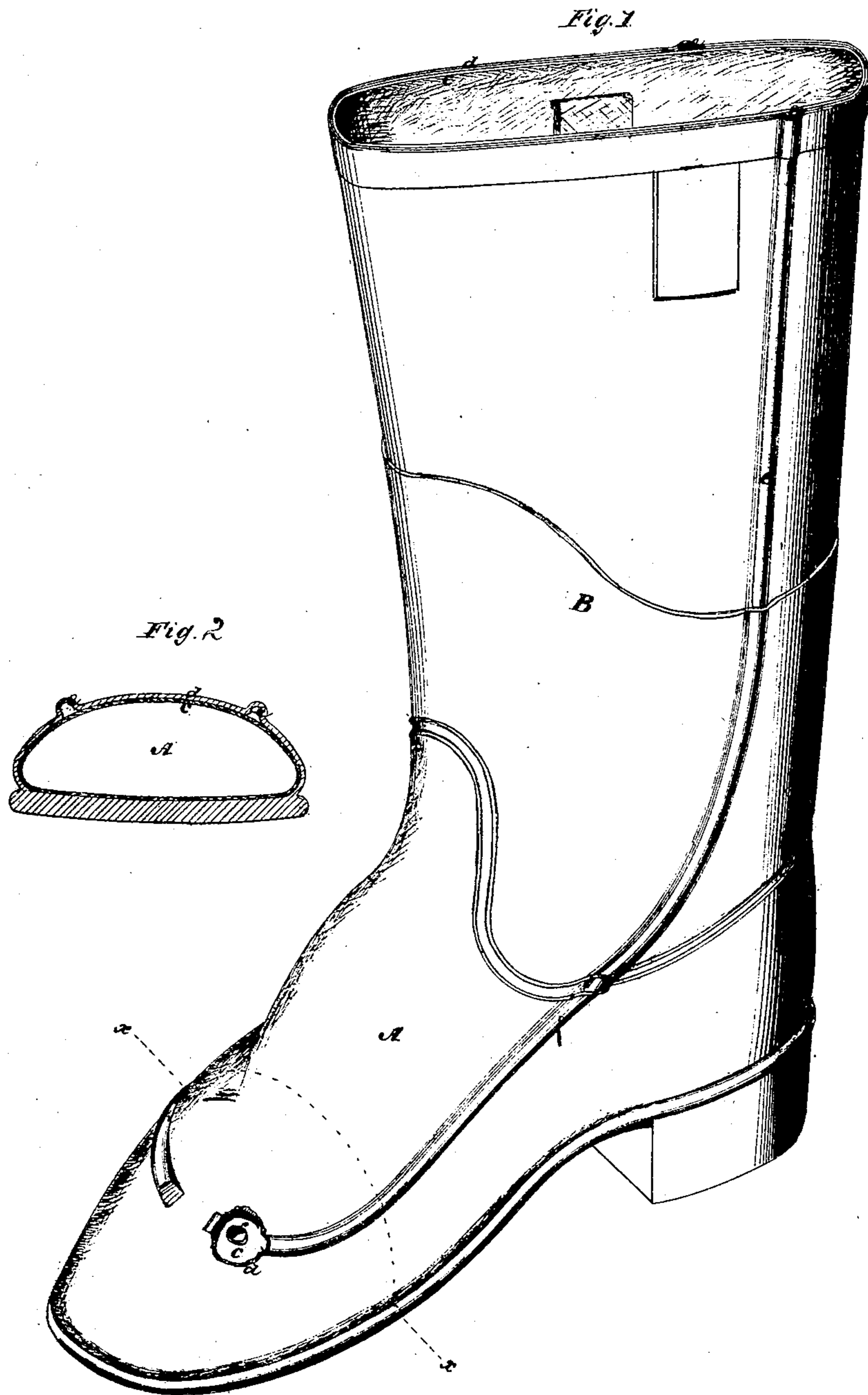


*H.C. Cottrell,*

*Rubber Boot.*

*No. 102,228.*

*Patented Apr. 26. 1870.*



*Witnesses:*  
*Chas. F. Smith*  
*Ed. H. Cully*

*Inventor:*  
*H.C. Cottrell* By *att.*  
*J. M. Lurie*

# United States Patent Office.

HENRY C. COTTRELL, OF NORWICH, ASSIGNOR TO W. H. HAYWARD, OF COLCHESTER, CONNECTICUT.

Letters Patent No. 102,228, dated April 26, 1870.

## IMPROVED VENTILATED RUBBER BOOT.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern :*

Be it known that I, HENRY C. COTTRELL, of Norwich, of New London county, in the State of Connecticut, have invented a new and useful Improvement in Ventilated Rubber Boots; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings making part of this application.

It is well known that, on account of the impervious nature of the material of which they are composed, rubber boots are very injurious to the feet of the wearer, without some means of ventilation.

To so make this kind of boots (and shoes) that the interior shall be thoroughly ventilated has, therefore, become a great desideratum, and several devices, intended to accomplish this desirable end, have been suggested and made the subject of Letters Patent, but none of the means of ventilation, so far, that I am aware of, answer fully the purposes for which they have been devised.

It has been suggested to form ventilating-channels or ducts on the internal surface of the boot, through which a circulation of air should be kept up, but this device for ventilation has proved not only ineffectual for the purposes of ventilation, but has rendered the boot so uncomfortable to the wearer as to preclude the general adoption of such a plan. Besides, no very economic method of manufacture has been suggested in connection with this plan of internal ventilating-channels.

It has also been suggested, as an improvement on the plan just alluded to, to arrange tubes in the exterior of the boot, secure them to the boot, and effect a communication between their lower extremities and the interior of the boot, by holes cut through the upper of the boot; but such a system is wholly impractical as a useful and economic invention, because of the attendant labor and expense incidental to the attachment of the separate tubes, the forming of the communication so as not to risk the imperviousness of the boot, &c.

Any method or system of ventilation, to become practically useful, must be such as will not only be efficient in its functions of ventilation, but must also involve simplicity, durability, and, above all, economy of manufacture.

To provide such a system or means of ventilation for rubber boots is the object of my invention, which consists in having one or more channels formed between the lining of the boot and the material composing the outer surface, the outer material being protruded or raised up so that the internal surface (which comes in contact with the wearer's foot,) shall remain smooth or flush, and communication being effected between the channel so formed and the interior of the

boot by holes, or a pervious spot in the lining near the lower end of the said channel, all as will be hereinafter more fully explained; and

My invention further consists in forming such channel or ventilating-tube (or tubes) between the lining and outer material, during the process of manufacture of rubber boots, by laying a cord or other flexible core on the lining, over which cord the rubber outer portion is molded and vulcanized, and which is then withdrawn, as will be hereinafter more fully explained.

To enable those skilled to make and use my invention, I will proceed to describe it more fully, referring by letters to the accompanying drawings, in which—

I have shown at Figure 1, in perspective view, a rubber boot embracing my said invention.

Figure 2 is a cross-section at  $x x$ , fig. 1.

At fig. 1 I have shown the material cut away near the lower end of one of the ventilating-tubes, so as to more distinctly illustrate the hole or aperture in the lining through which the tube communicates with the interior of the boot.

In the several figures the same part is designated by the same letter of reference.

A is the foot-portion and B the leg of a rubber boot, such as generally manufactured, except that it has my invention embodied in it.

The boot, as usual, is made with a lining, C, between which and the rubber portion  $d$  are formed the ventilating-tubes  $e$ , as will be explained presently.

I have shown two ventilating-tubes  $e e$ , formed one on each side of the leg B, and extending down along the foot-portion A to near the center of the upper part of the foot, below the instep, (or nearly over the toe.)

At  $f$ , at about the lower extremity of each of the channels or tubes  $e$ , a hole is cut through the lining C, to form a communication between the interior of the boot and the said channel or tube, so that air may freely pass into and out from the foot-portion of the boot (while on the foot) through said channels, making its entrance and exit at the upper end or mouth of the tube, (at the top of the boot-leg A.)

I have shown two ventilating-tubes, but the number may, of course, be increased or reduced without departing from my invention, though I deem two, one on each side, arranged as shown, to be a good number and arrangement.

When the boot is on the foot of the wearer, motion of the foot in walking will tend to create a constant pumping operation or forcing out of the air, and rushing in of fresh air to supply the place of that forced out, and thus the foot and interior of the boot will be constantly and effectually ventilated, which will prove a great benefit, as one of the great objections to wearing rubber boots, as now manufactured,

is their unhealthfulness to the wearer, in consequence of there being no ventilation to the foot.

In the manufacture of my improved ventilated boot I place the lining C, which is perforated as shown at f, on the wooden last, (over which the boot is formed as usual,) and laying on a cord, (of the intended size or diameter of the channel to be formed,) I place and form over it the rubber material while in its sticky and pliable condition, commencing at the foot, and shaping the rubber cloth over the cord until the entire last is covered and the boot formed.

The boot and last, with the cord or flexible core in place between the lining and rubber cloth, is then put in the furnace, to undergo the usual desulphurizing process, after which the cord or core is withdrawn, leaving the rubber cloth along that portion where the cord was laid disconnected from the lining, and bulged or protruded outward, so as to have an open space or channel all along between the lining C and rubber portion d, as clearly shown.

It will be seen that, by thus forming the channels by laying on a cord, molding the rubber over it, and afterward withdrawing the core, as explained, the exterior of the boot is as perfectly impervious as in the ordinary rubber boots, the process of manufacture is rendered so little more expensive as to enable the manufacturer to sell the ventilated and much more desirable boot at nearly the same price as the present

unventilated and unhealthful boot, in the market, and the ventilation of the boot will be perfect.

While these advantages are gained, the boot, it will be seen, is left perfectly smooth or flush inside. The lining is not ribbed or in any way protruded inwardly, or otherwise so as to affect the comfort of the wearer, which is a great desideratum.

Having explained my improved ventilated boot, and the method of making it, so that those skilled in the art can make and use my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. Forming the channel or channels for the passage of air between the lining and the outer rubber portion, and having the rubber portion protruded or shaped up, while the lining preserves the usual shape, substantially as described.

2. The method or process of making such ventilated boot by the employment of a cord or flexible core, laid in during the molding of the material on the last, and withdrawn after the boot is desulphurized, substantially as hereinbefore set forth.

In testimony whereof I have hereunto set my hand and seal this 18th day of October, in the year 1869.

HENRY C. COTTRELL. [L. s.]

Witnesses:

WEBSTER PARK,

THOMAS E. SPARKS.