

# United States Patent Office.

ROBERT ANDREWS, OF MILWAUKEE, WISCONSIN.

Letters Patent No. 81,457, dated August 25, 1868; antedated August 7, 1868.

## IMPROVEMENT IN BOOTS AND SHOES.

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, ROBERT ANDREWS, of the city and county of Milwaukee, and State of Wisconsin, have invented and discovered a new and improved Mode of Making a Water-Proof Boot and Shoe, constructed out of common leather, morocco, sheep or calf-skin; and I do declare that the following is a full and exact description thereof.

The nature of my invention consists in making a boot or shoe with two thicknesses of skin, so as to bring together in juxtaposition the hair or grained sides of the leather or material; that is to say, the upper or outward piece, being of ordinary common leather or skin, blackened and finished on the flesh-side, is used so as to bring the hair or grained side inward. The lining or inner piece being of such leather or skin as is ordinarily used for lining, but not blackened on either side, is used so as to bring the hair or grained side thereof in contact with the hair or grained side of the upper, so that the flesh-side of the upper shall be outward and the flesh-side of the inner be inward and next to the foot; and also for the purpose of preventing abrasion or wearing of the two surfaces thus brought together, my invention includes the use of some lubricating-material. My discovery is, that so long as the grained surface or hair-side of the leather can be kept unbroken, it will shed water, and be perfectly impervious to it.

To enable others to make use of my invention, I will proceed to describe the mode of making a boot or shoe according to my invention, with my reasons therefor.

First, I discovered that the hair-side or grained side of an animal was impervious to water so long as the epidermis, the outer coating of the skin, which is very thin, remained unbroken; that the human hand, for example, could be thrust into a poisonous liquid, so long as the outer surface was unbroken, without injury, because none of the liquid could penetrate the skin and be absorbed, but that the slightest scratch would destroy the invulnerability; that I could pour water on the hair-side of a skin of leather, and it would run off; that if I poured it on the flesh-side, it would become absorbed; that a piece of sole-leather could be easily wet through by putting the flesh-side in water first; that it would float in water upon the hair-side, and remain dry; that if I cut or scratched the hair-side, I could wet it from one side as well as another.

To make a boot or shoe water-proof, then, it was only necessary to keep the hair-side of the skin exposed to the water and the flesh-side protected, but this hair-side must remain unbroken and unmarred, for the least abrasion will destroy its impervious character.

To make a boot or shoe water-proof, then, I put together two pieces of skin or leather, one for the upper, the other for the lining or inner piece. I seek to preserve the water-proof character of the inner skin, and to do this, I strive to keep the surface of the hair-side, the epidermis, unbroken or uninjured so far as possible, and to present that side to the water or dampness. To keep it unbroken and free from injury, I put the hair-side or grained side of the upper or outer piece and lower or lining together, because those two surfaces are smooth, and will be least likely to be injured by rubbing and wear. Next, I introduce between them some oily substance, which shall act as a lubricating-material, and prevent injury to the surfaces from attrition. Some water-proof composition can be used for that lubrication, and I believe my "composition for improving and preserving leather" the best, although nothing is claimed for its special use for this purpose by the way of patent. I use this composition because I claim that it will of itself make leather water-proof to some extent, and thus repair any blemish in the natural water-proof condition of the skin used for the lining.

My method differs from the former mode of making boots and shoes in that, whereas it is usual that boots and shoes are made of two thicknesses of leather, yet, by the old mode, the flesh-sides of the two pieces, put together, both lay outward, and consequently the pores of the skin were all open to absorb fluids. The little cups or valves which are found on the hair-side of the skin all open inward toward the foot. By my method, the two hair-sides or grained surfaces being brought together, the valves or cups of the pores of the skin used for lining are closed, and kept closed, and kept also intact, while the valves of the pores of the upper skin open towards the foot, yet they admit the oil which is put upon the boot, and thus subserve another purpose, herein after explained.

The sole of the boot or shoe is constructed, by my method, on the same principle. The inner sole is laid with the flesh-side to the foot and the hair-side outward, and between that and the second sole is put some lubricating-material to prevent injury to the grained side.

Again, it is well known that boots and shoes which are exposed much to the action of water and earth become brittle at the connection with the upper and the sole. I cause the upper and lining, by my mode of construction, to be more durable, and less likely to crack, by keeping out the water from the inner, (and if my "composition" be used,) by strengthening the fibres of the outer or upper leather, the strongest part being always kept soft by the lubricating-material between the surfaces, and by any oily applications on the outside being absorbed through the pores of the outer piece, and thus keeping up the supply of lubricating-matter.

A boot or shoe, made according to my invention, has the flesh-side of the lining, as well as of the inside sole, next to the foot, and these surfaces, having the pores of the skin all opening outward, absorb and carry off moisture from the foot. Thus the foot is kept dry by being protected from incoming fluids, and by absorption of the moisture within.

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

The method of making boots and shoes water-proof, by putting the hair-side or grained surfaces of two pieces of leather together, and putting between them some lubricating-material, to prevent abrasion and injury from attrition, as herein described, using, for the purpose of lubrication, any material composed by me, or any oily substance which will produce the intended effect, and using any and all kinds of leather which may be used to make boots and shoes made of any and all kinds of skins.

Dated at Milwaukee, January 4, 1867.

ROBT. ANDREWS.

Witnesses:

R. N. AUSTIN,  
NATH. PERELES.