Aug. 11, 1936. B. B. ENOS 2,050,751

BOOT OR SHOE

Filed Dec. 19, 1934

Fig. 1

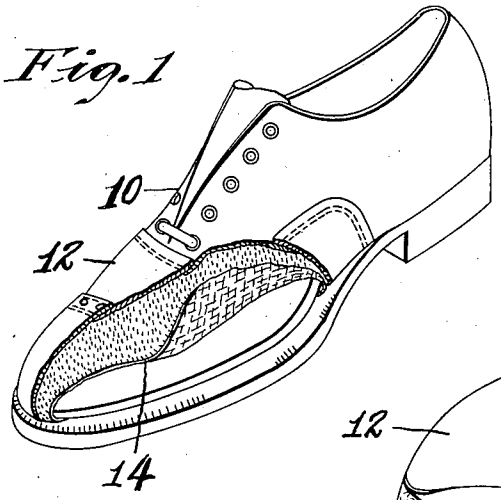
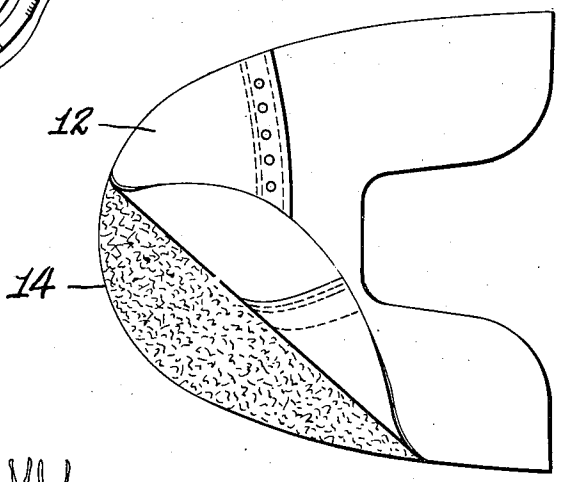



Fig. 2



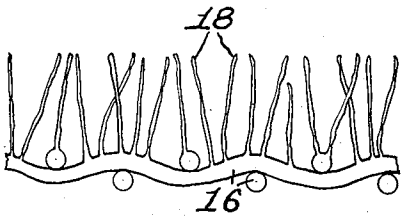




Fig. 3

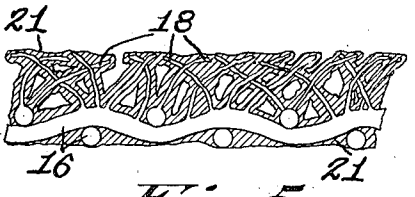



Fig. 5

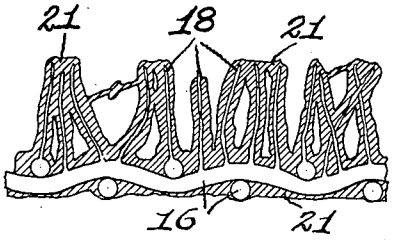



Fig. 4

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Patented Aug. 11, 1936 2,050,751

# UNITED STATES PATENT OFFICE

2,050,751

## BOOT OR SHOE

Benjamin B. Enos, Salem, Mass.

Application December 19, 1934, Serial No. 758,249

1 Claim. (Cl. 36—55)

This invention relates to a boot or shoe.

In general, the object of the invention is to produce an improved construction of boot or shoe by the incorporation therein of a novel lining for the boot or shoe and by which a superior, more durable, and more comfortable boot or shoe is produced, and one in which the lining cooperates with the upper to support the upper in such manner as to prevent the upper from being broken down while at the same time imparting to the boot or shoe a characteristic softness or glovelike feel in the leather comprising the upper.

With this general object in view, and such others as may hereinafter appear, the invention consists in the boot or shoe hereinafter described and particularly defined in the claim at the end of this specification.

In the drawing illustrating the preferred embodiment of the invention, Fig. 1 is a perspective view of a shoe with portions broken away to show the present lining; Fig. 2 is a plan of the lined upper of the shoe; Fig. 3 is an enlarged diagrammatic view illustrating a nap fabric from which the present lining is produced; Fig. 4 is a similar view illustrating the nap fabric shown in Fig. 3 with the upstanding fibers individually coated and retained in an upstanding position; and Fig. 5 is an enlarged diagrammatic view of a nap fabric such as is shown in Fig. 3, in which the individual fibers are rubber-coated and pressed down to a more or less compact condition.

Prior to the present invention various materials have been proposed and attempted to be used for the linings of the uppers of boots or shoes. The general commercial practice, however, has been to utilize a starched twill, or similar material, as the lining material for the upper of the boot or shoe. Usually the linings have been cemented to the under surface of the upper of the boot or shoe and the flexibility and desirable soft natural feeling of the leather comprising the upper is diminished by the cement as the latter gradually becomes hardened and a composite boardlike feeling is imparted to the upper of the shoe. In some types of shoes this effect is less noticeable than in others but in the softer shoes such as women's shoes, particularly those made of kid, the cementing of the lining to the under side of the upper substantially detracts from the commercial value of the shoe.

The ordinary starched lining tends to break down during the use of the shoe, and this effect is attributable to the fact that when starched nap fabrics are used as the lining material, the starch soon disintegrates under the influence of the moisture and heat from the foot and the nap mats down so that the lining tends to sag and will not spring back into its normal position under the influence of the continual flexing of the upper when the shoe is worn. The present invention seeks to produce an improved shoe by the incorporation in the shoe of a novel and improved lining. It has been discovered that by utilizing a nap fabric, particularly a hard fabric such as a twill or a drill in which the filling material is soft enough to enable a substantial length of nap to be raised, it is possible to coat the individual upstanding fibers comprising the nap, as well as the warp and filling threads themselves, with a thin layer or coating of rubber or rubber composition and to obtain a material which possesses the characteristics which render it most suitable for use as a lining material for the vamp or upper of a shoe.

Referring now to the drawing, 10 represents a shoe having an upper 12 and a lining 14. The lining 14 in accordance with the present invention comprises a fabric formed of a woven base 16 and nap fibers 18 upstanding from one surface thereof. The fabric may and preferably will be of any of the types now used in producing shoe linings, such as bleached, unbleached, and/or dyed twill, and which is napped on one surface in accordance with any well-known napping process. The nap fabric is illustrated in Fig. 3, and in producing the present lining material from the nap fabric, the latter is rubber-coated with a thin flexible coating 21 of rubber or rubber composition and the rubber coating is preferably vulcanized. The rubber coating 21 may and preferably will enclose the individual nap fibers and also the individual warp and weft threads comprising the base of the fabric to tie together all of the component fibers into a flexible, nonfrayable, and moisture-resisting sheet.

By the use of the thin rubber coating 21, the fabric itself has imparted to it the ability to spring back when deflected from the normally arched position occupied by the shoe lining in the completed shoe, so that during the use of the shoe the upper may bend and "break" naturally and the continual flexing of the shoe upper in use will not result in the breaking down of the lining nor of the production of permanent wrinkles therein. In other words, the rub-

berized lining material possesses an inherent spring-back enabling the material to support the shoe upper in an improved and superior manner and one which is more noticeable after the shoe has been worn for a substantial length of time in comparison to comparable constructions of shoes of the prior art.

In producing the rubberized nap fabric I may proceed with the rubber coating of the nap fabric of Fig. 3 in such manner as to permit the upstanding fibers to remain in their raised position, or in some instances I may prefer to subject the rubber coated fabric to pressure to cause the coated fibers to lay down or partially lay down, in the manner diagrammatically illustrated in Fig. 5. In either case the rubberized fabric possesses the desired inherent spring-back when deflected from an arched position and the ability to remain in a smooth, unwrinkled condition during the use of a shoe in which such a material is incorporated as the lining thereof. In producing the rubber coated fabric illustrated in Fig. 4, I may proceed in accordance with the process set forth in the Libbey Patent No. 1,922,444, August 15, 1933, to which reference may be made, and in producing the rubberized fabric illustrated in Fig. 5 I may subject the rubber coated fabric produced, and before it is vulcanized, to compression as by passing it through pressure rolls and then vulcanizing the rubber coating with the fibers in a laid-down or partially laid-down condition.

In incorporating the rubberized nap fabric in the shoe, it is preferred to utilize the rubberized upstanding fibers as a cushion and resilient supporting means for the upper, so that, particularly in the shoes made of the lighter leathers, the resiliency contributes to imparting a desirable glove-like feel to the leather of the upper. This feature has never in practice been attained for the reason that heretofore it was necessary to heavily back such light uppers and utilize cement in causing the adhesion of the lining material to the upper with the result that it has heretofore been impossible to produce a satisfactory shoe which would stand up and in which at the same time the leather possessed the desirable softness and glove-like feel. The rubberized lining material, having as the base thereof a fabric such as the ordinary twill or drill used at the present time for shoe linings, represents an important advance over the ordinary starched lining heretofore employed, particularly in that it possesses an inherent spring-back when deflected from an arched position, a property which causes the upper to remain in a position conforming to the last during most if not all of the life of the shoe. In the ordinary shoe employing the regular starched nap lining, the starch disintegrates and the nap mats down after the shoe has been worn and the lining material possesses substantially no ability to spring back into an arched position when deflected therefrom.

Another advantage of the present rubberized lining material resides in the fact that it is unnecessary to cement the lining to the upper in order to insure that the walls of the shoe will stand up. Utilizing the proper weight of the fabric as the base of the present rubberized lining material, it has been found that it is unnecessary to cement the lining to the shoe upper and also that the lining itself will properly support the shoe upper without the use of a doubler. Because of the fact that the present rubberized lining material possesses minimum stretch, it is possible to pull the lined upper over the last with a smooth steady pull, whereas with regular starched linings possessing a maximum stretch, a so-called "snap" pull is experienced when the lined upper is pulled over the last. This feature contributes to the appearance of the finished shoe. The rubberized lining material also serves to reduce to a minimum the exposure of the leather to the effects of perspiration from the foot, not only adding to the life of the leather itself but also to the lining. The rubber coating extending as it does over the individual nap fibers and also around the individual warp and weft threads making up the fabric converts the material into a non-fraying material, thus enabling the linings to be cut accurately to conform to the vamp without the production of any frayed edges.

As above stated, I prefer to produce the present rubberized lining material in accordance with the process set forth in the Libbey patent above referred to, to the end that in both forms of lining material illustrated in Figs. 4 and 5 a substantial number of inter-communicating air spaces **23** will be provided in the vulcanized rubberized material so that this porosity may be utilized in permitting the foot to breathe. Viewed in the broader aspects of the invention, however, other rubberizing processes may be employed in rubberizing the fabric, and while the term rubber has been utilized through the specification and claim it is intended to include thereby, various rubber compositions which may be found suitable for the purpose.

The present application is a continuation, in part, of my prior application Serial No. 685,349.

While the preferred embodiments of the invention have been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claim.

Having thus described the invention, what is claimed is:—

In a boot or shoe, the combination with the upper, of a lining therefor comprising a fabric having a hard backing and a nap the upstanding fibers of which are individually rubber coated, and having inter-connecting air spaces between the coated fibers to impart porosity to the rubberized fabric, the fabric itself being rubberized and the rubberized nap surface being disposed toward the upper, the structure of the fabric and the rubber coating cooperating to impart a characteristic spring-back to the lined upper.

BENJAMIN B. ENOS.