

S. V. VAN DENBURGH & J. H. GLISMANN.
RUBBER SPADING BOOT.

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928,718.

Patented July 20, 1909.

Fig. 1.

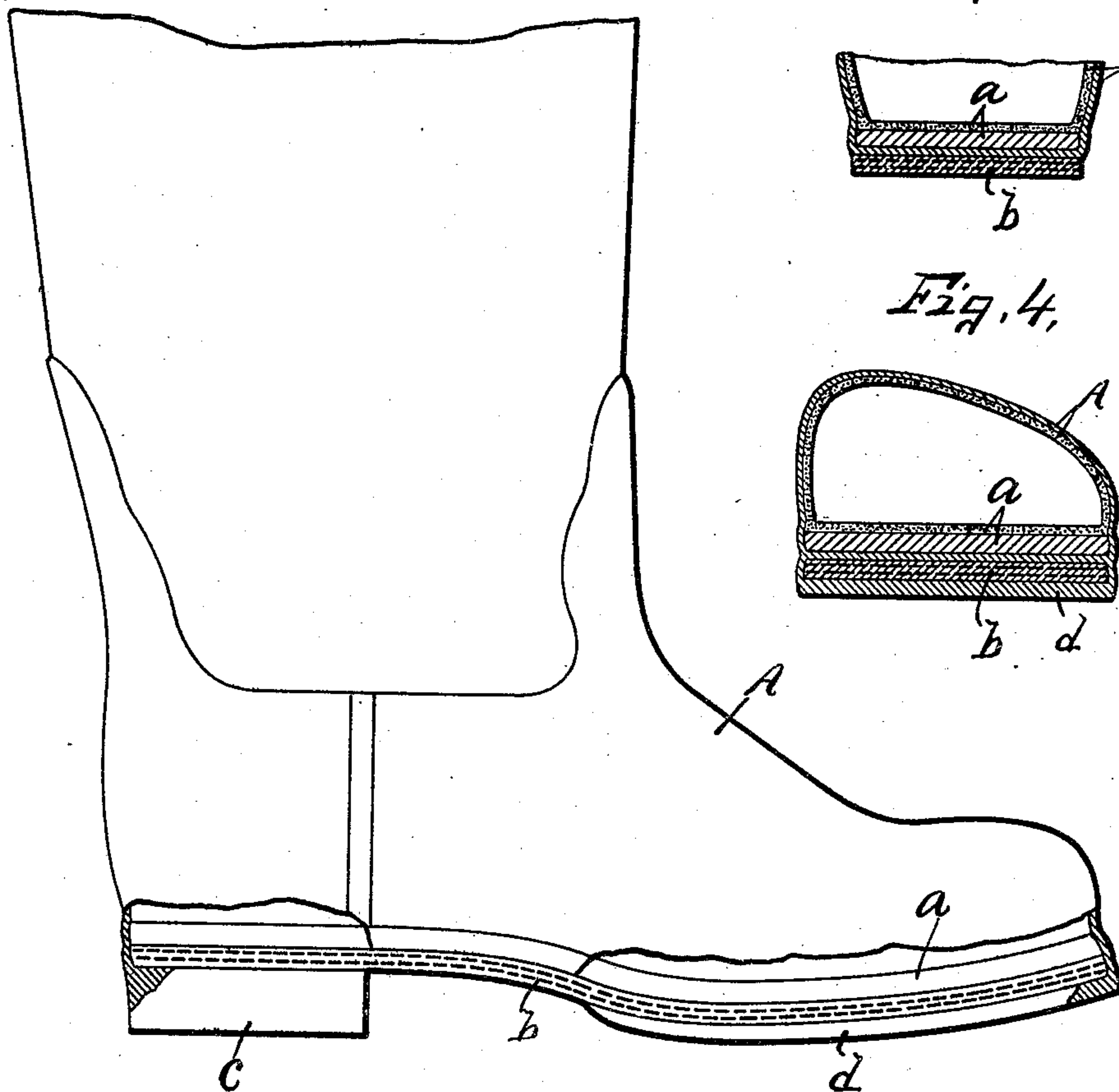


Fig. 3.

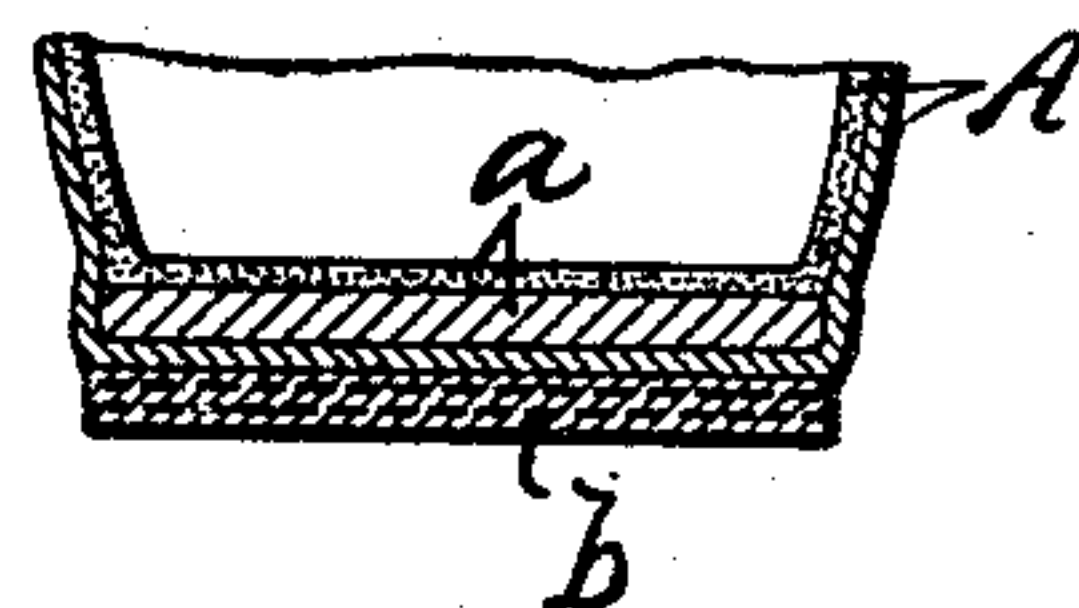


Fig. 4.

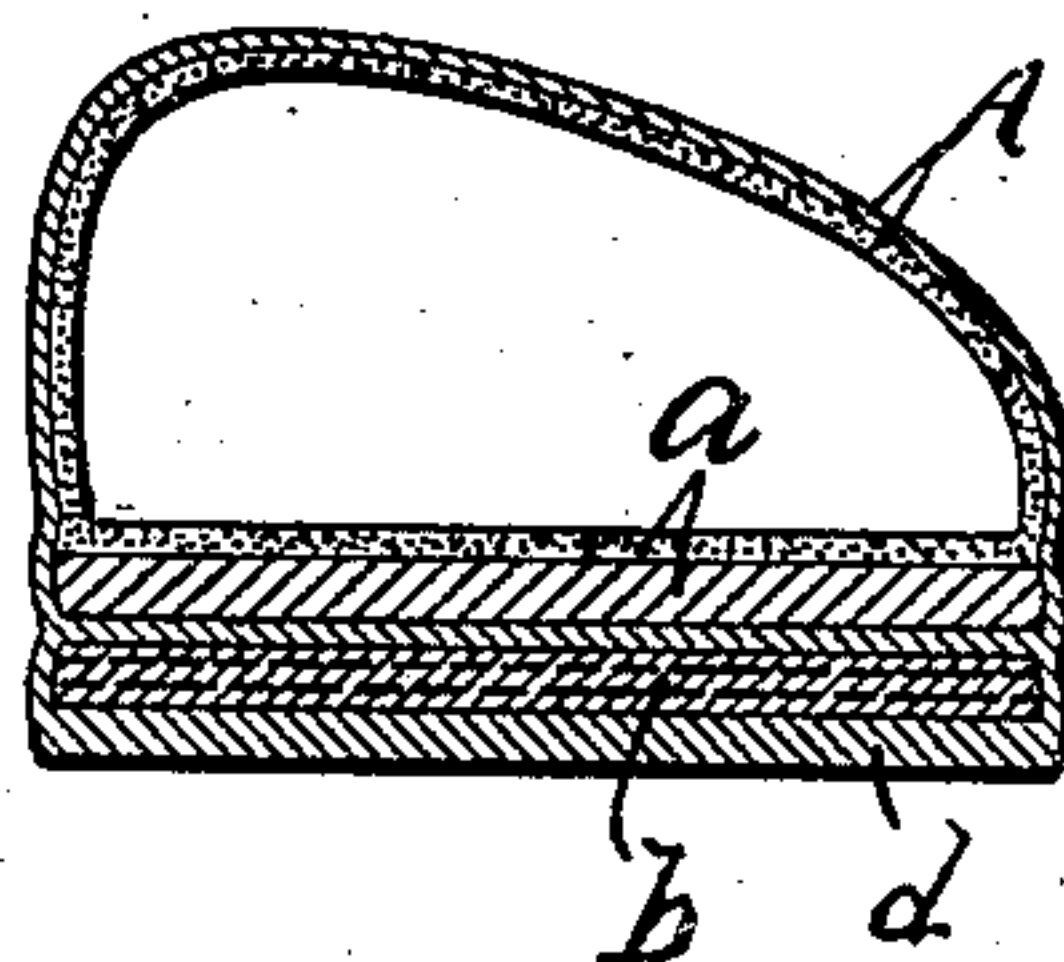


Fig. 2.

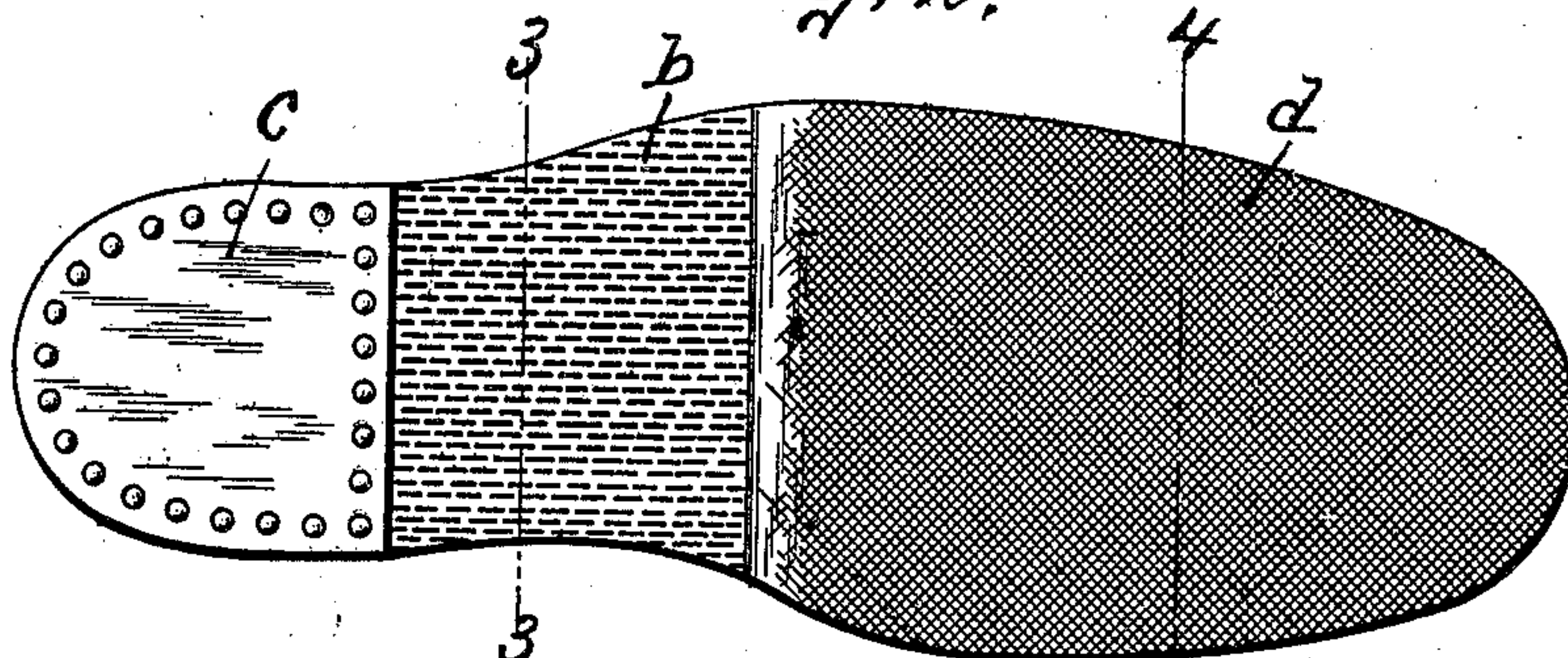
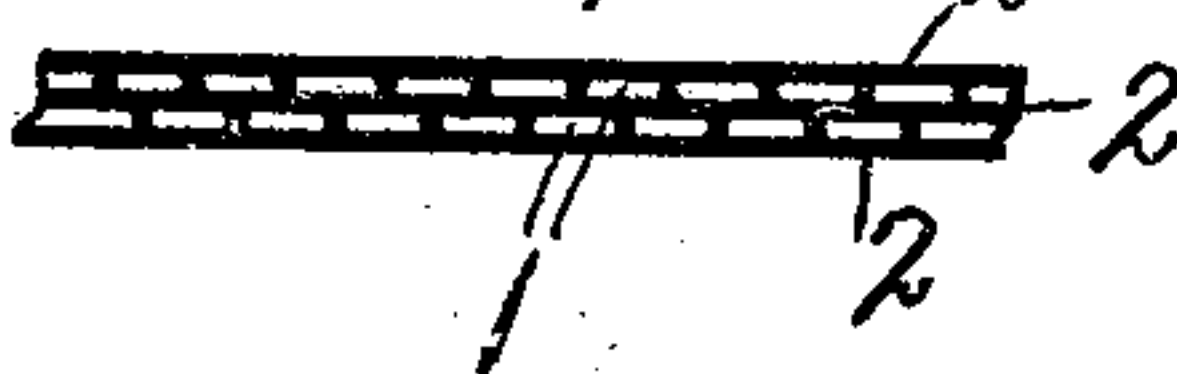


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

SAMUEL V. VAN DENBURGH AND JOHN H. GLISMANN, OF SYRACUSE, NEW YORK.

RUBBER SPADING-BOOT.

No. 928,718.

Specification of Letters Patent.

Patented July 20, 1909.

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To all whom it may concern:

Be it known that we, SAMUEL V. VAN DENBURGH and JOHN H. GLISMANN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Rubber Spading-Boots, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in rubber-spading boots, and refers more particularly to the construction of the sole and instep, as well as the support for the heel.

It is well known that in land irrigation, and in fact, in all digging where the laborer is obliged to work in moist earth or water, he is necessarily obliged to wear rubber boots, which are not only used to keep the feet dry, but are also subjected to the severe usage of forcing the spade or shovel into the earth, as is common in ditch or trench making, particularly in land irrigation. This strain invariably comes upon the instep of the boot; that is, upon that portion of the boot between the heel and the sole.

We are aware that strips or plates of metal, wood and similar rigid material have been inserted in the instep of the rubber-spading boots to relieve the instep of excessive strains incidental of the forcing of the spade or shovel into the earth, but so far as we have been able to learn, these metal or wood inserts have been impracticable for the reason that they soon loosen and cause excessive abrasion of the bottom of the boot to such an extent as to soon render the boot unfit for further use, as it is well known that it is quite impossible to cement rubber to metal or wood with sufficient firmness to withstand the severe usage to which the boot is subjected. It is also well known that an ordinary rubber boot, when used in spading or shoveling, as commonly practiced in making irrigating trenches, is extremely short-lived, lasting in most instances, not more than two or three weeks, which of course, makes it very expensive for those who are obliged to supply these boots.

Our object, therefore, is first to provide a flexible, yet extremely durable instep between the heel and sole of the boot, which instep may be firmly incorporated with the sole and may be subjected to the severest strains, as a spading boot without cracking or otherwise injuring the upper. In other

words, we have sought to provide the ordinary boot with a bottom layer of tough flexible material, similar to what is commonly known as rubber-belting, which is co-extensive with the bottom of the boot, but exposed at the instep where it is brought into contact with a spade or shovel in forcing such spade or shovel into the earth. This sub-layer of flexible material is specially made to suit the requirements of the boot, and is preferably composed of one or more layers of coarse canvas or ducking, to the opposite faces of which are applied coatings of rubber which are pressed into and through the interstices of the fabric so that the opposite coatings are united through such interstices, thereby clenching the rubber to the fabric and forming a tenacious flexible, yet exceedingly tough body. The exposed faces of this flexible layer are therefore, of the same material of which the boot is made and the contiguous faces of the layer and boot may consequently be vulcanized and firmly united without liability of loosening, as would be the case in the use of metal, wood, or similar rigid inserts. A further use of this rubber-canvas sub-sole is to afford a yielding, yet tenacious support for the heel to prevent the latter from crushing upwardly into the counter or upper of the boot, as it is well known that owing to the fact that the heel is necessarily of greater rigidity than the superposed counter to which it is secured, the heel is more or less liable to press upwardly into the counter after a short period of use. Furthermore, it is known that the tap of rubber which is usually secured to the sole is somewhat stiffer than the upper to which it is secured, and owing to this fact, it is more or less liable to crack across the ball of the foot, and by extending our improved rubber-canvas sub-sole entirely across the bottom of the boot, it forms a tough, yet flexible support for the tap and affords a means for vulcanizing the rubber tap thereto, giving the entire sole a degree of resistance against cracking, which is not possible without the use of the rubber-canvas layer.

Other objects and uses will be brought out in the following description.

In the drawings—Figure 1 is a side elevation of the lower portion of the boot equipped with our improved rubber-canvas sub-sole. Fig. 2 is an inverted plan of the boot seen in Fig. 1. Figs. 3 and 4 are sec-

tional views taken respectively on lines 3—3, and 4—4, Fig. 2. Fig. 5 is an enlarged detail view of a portion of a rubber-canvas sub-sole, showing the clenching of the rubber through the interstices of the fabric.

A represents the upper of an ordinary rubber-boot having a rubber top or inner sole —a— co-extensive with the bottom of the boot, and to which the upper is vulcanized in the usual manner.

Secured to the bottom of the inner sole —a—, and co-extensive therewith is a sub-sole —b— of rubber-canvas similar to what is commonly known as rubber belting, except that it is composed of one or more layers —1— of canvas or coarse ducking, each layer being coated on its opposite faces with rubber —2—, which is pressed or otherwise forced through the interstices of the canvas so as to clench the opposite coatings of rubber through such interstices to form a unitary rubber fabric body, the canvas serving as a bond for the rubber and adding materially to the flexibility and indestructibility of such rubber, and at the same time the rubber coatings on the canvas enable the sub-sole to be vulcanized with the main body or upper of the boot, or also to the insole. This rubber fabric layer or sub-sole —b— as the bottom of the boot being co-extensive with and vulcanized to the bottom of the insole —a— is, therefore, co-extensive with the bottom of the boot extending from the toe to the heel, and from side to side, and is exposed at the instep between the heel, —c—, and a rubber tap —d—, both of which are vulcanized to the bottom of the rubber fabric sub-sole —b—, and are also vulcanized at the sides to the upper —A—. The tap —d— is, therefore, of less length than the distance between the toe and breast of the heel, leaving the intervening portion of the rubber-fabric sub-sole —b— exposed at the instep for engagement with the spade, shovel or other instrument used in digging or trench making. This idea of leaving the instep portion of the rubber-fabric sub-sole —b— exposed be-

tween the heel —c— and tap —d—, is the essential feature of our invention, because it affords a tough, yet flexible wearing body for pressing the spade or shovel into the ground in the usual way for digging, at the same time by making such rubber-fabric sub-sole co-extensive with the bottom of the boot, it forms a tough, yet flexible support for the heel —c— and tap —d— to prevent the heel from crushing upwardly into the upper, and also preventing cracking of the ball of the tap.

By clenching the rubber coatings on the opposite faces of the fabric of the sub-sole —b— through the interstices of such fabric, this sub-sole is made absolutely waterproof, and by reason of the fact that such sub-sole may be vulcanized directly to the upper as well as to the heel —c— and tap —d—, it is evident that the joints between such parts are also absolutely waterproof.

What we claim is—

A rubber spading boot having a sub-sole co-extensive with and secured to the bottom of the boot and said sub-sole having a part thereof constituting the wearing part of the sole of the boot for spading purposes, said sub-sole consisting of a plurality of layers of fabric, each having opposite coatings of rubber clenched together through the interstices of the fabric, said coatings connecting the layers together, a heel secured to the lower face of the sub-sole at the end thereof, and an outer sole secured to the lower face of the sub-sole at the forward portion thereof and terminating at a point removed from the heel whereby the spading portion of the sub-sole is formed between the outer sole and the heel and is permanently exposed.

In witness whereof we have hereunto set our hands this 15th day of December 1906.

SAMUEL V. VAN DENBURGH.
JOHN H. GLISMANN.

Witnesses:

H. E. CHASE,
C. M. McCORMACK.