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R. GOUABAULT

2,605,560

SHOE SOLE

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Fig. 1

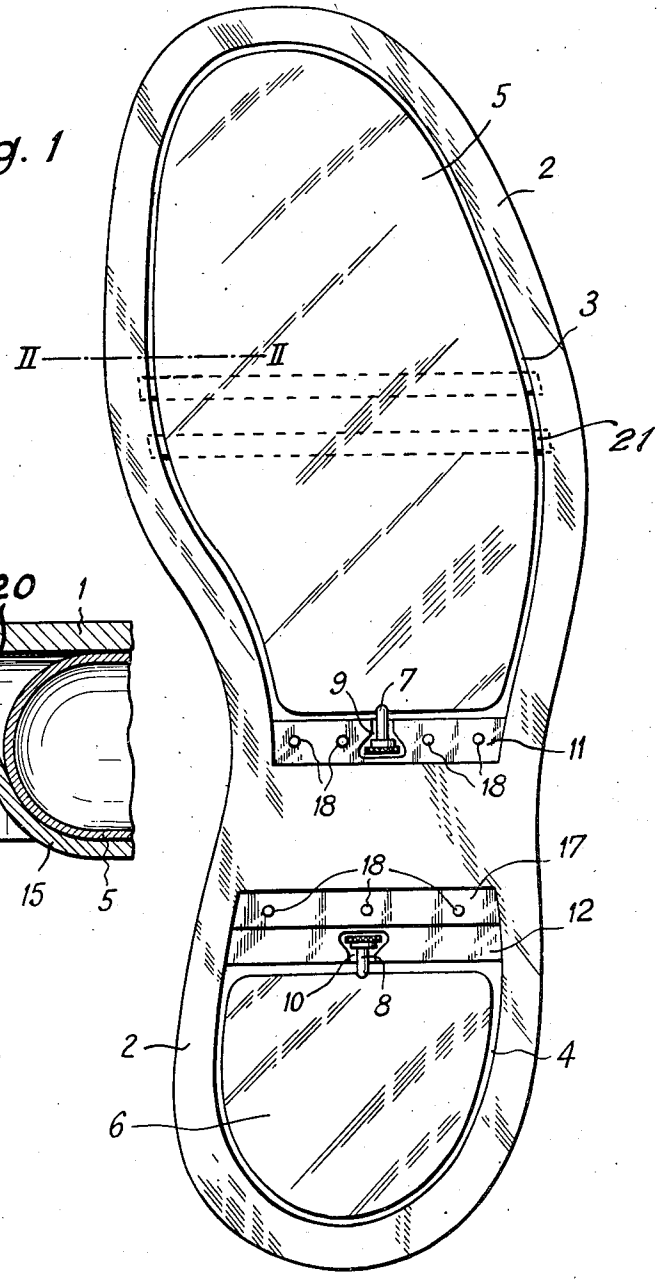
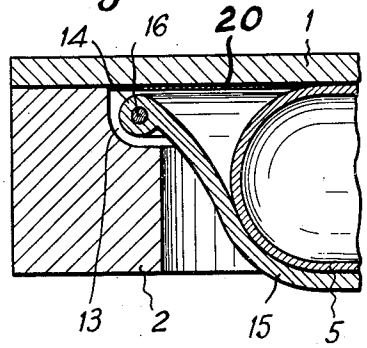


Fig. 2



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UNITED STATES PATENT OFFICE

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SHOE SOLE

Robert Gouabault, Brezolles, France

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In France July 31, 1950

1 Claim. (Cl. 36—29)

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My invention has for its object a shoe sole allowing a very easy gait while reducing or cutting out the strain on the wearer who becomes unsensitive to the roughness of the ground he is walking on, as due for instance to the pebbles of a sidewalk or to the paving stones of the roadway. Furthermore, this improved sole is a poor conductor of heat and is particularly pleasant to wear both in winter and in summer. It may be incorporated to working shoes, to walking shoes, to town shoes as well as to indoor shoes. When applied to heavy shoes, such as army shoes for instance, it allows walking more easily, quicker and with less fatigue.

The sole according to the invention is, furthermore, economical and highly resistant to wear and tear.

According to my invention, the sole includes one or several recesses containing one or several air bags or chambers projecting slightly beyond the lower surface of the sole.

The air bags or chambers may be protected by a cover of rubber for instance.

The sole may include a thick edge defining recesses in which bags or chambers filled with air are housed together with a cover therefor, such a cover being made for instance of rubber or the like material.

A thin sheet of leather for instance may, furthermore, be fitted between the sole and the vamp.

The covering of the air chambers or bags may be constituted by a sheet of material such as rubber provided along its edge with a reinforcement such as a metal wire, the cover edge provided with said reinforcement being housed inside a groove provided inside the thick edge of the sole.

A metal or the like stiffening member may be fitted between the sole and the vamp of the shoe. The medial part of the sole lying between the sole body and the heel may include no recesses of the type referred to and show only housings for the valves used for inflating the air chambers or bags.

This medial part of the sole located between the sole body and the heel, when including no recesses for air bags, may be slightly cut out and carry means for securing the cover edge, said edge being housed in the cut out part or parts so as to produce no extra thickness underneath the sole.

Lastly, in a modified embodiment, the sole may be provided with one or several air filled chambers or bags and a cover for the latter, the edge of the cover constituting a thick edge for

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the sole which edge is secured underneath the shoe body.

I will now describe with further detail a preferred embodiment of my invention given by way of example, reference being made to accompanying drawings, wherein:

Fig. 1 is a view from underneath of a sole according to the invention, the cover being removed so as to allow the air bags and inflating valves to become apparent.

Fig. 2 is a cross-section through line II—II of Fig. 1, the vamp of the shoe not being illustrated while the cover of the bag is shown in its normal location.

Fig. 1 illustrates a sole according to my invention, said sole including three parts, to wit: the sole body, the instep or medial part, and the heel.

The vamp of a new shoe may first be provided with a thin sole 1, of leather for instance, to which is secured the sole according to my invention, that will now be described.

Said sole according to my invention includes a flange or edge 2 defining grooves or recesses 3 and 4 for engagement by a metal rod while an air chamber or bag 5 or 6 is arranged inside the corresponding recessed part of the sole body and of the heel. Each air chamber 5 or 6 is provided with a corresponding valve 7 or 8 housed inside a small recess 9 or 10 formed inside one of the edges 11 or 12 of the recesses facing the medial part of the sole.

The portion of the shoe edge 2 defining the recess 3 may assume a breadth and a thickness substantially equal to 1 cm., for instance. In contradistinction, the portion of the edge 2 defining the groove 4 in the heel may assume a thickness that is for instance double, the heel being normally higher than the sole body.

The edge 2 may be provided as illustrated in Fig. 2 with an auxiliary groove adapted to be engaged by the edge 14 of the cover 15 enclosing the air chamber 5 or 6.

This cover may be made for instance of rubber or the like material. The edge 14 of the cover 15 may be comparatively thick and include a reinforcement constituted by a metal wire or rod 16 or a cable. This edge 14 is held fast through engagement of its reinforcement inside the groove 13 in the sole edge. The covers 15 of the air chambers 5 and 6 include each towards the middle of the sole a section adapted to engage a recessed part 11 or 17. Said parts 11 and 17 are shallow as it is not necessary as a matter of fact for the covers 15 to extend substantially beyond the sole. These parts 11 and 17 are

provided with ports 18 adapted to receive pressure screws the heads of which are embedded inside the covering material 15.

The air chambers are inflated through the valves 7 and 8 at a suitable pressure varying with the weight of the wearer, after which the inflating valves 7 and 8 are housed inside the small recesses 9 and 10 and the pressure screws engaging the covers 15 are fitted into the openings 18 so as to provide means for closing hermetically the recesses 3 and 4 and to thereby prevent the earth and gravel from entering the latter.

The covers 15 may of course be made of any suitable material other than rubber such as yielding and resistant leather.

It is also possible to provide a thin plate of steel 20 (Fig. 2) laid over the vamp; this plate may alternatively be replaced by a plurality of metal plates such as are shown at 21 in Fig. 1, secured rigidly and transversely over the thin leather sole 1 so as to ensure rigidity of the shoe.

After inflation of the air chamber, the middle of the covers 15 projects slightly beyond the thickness of the sole and allows thus the wearer to assume a very easy and light gait.

In the case where a pointed part were to tear an air chamber open, it would always be possible to continue walking as the shoe would then rest transiently on the ground only through the edges 2 of the sole.

Of course, my invention is by no means limited to the embodiments that have just been described and that may be submitted to detail modifications without unduly widening the scope of the invention as defined in accompanying

claim. For instance, the covers 15 with their reinforced edges 14 may be replaced by yielding or elastic sheets, the edges of which are thick and provide consequently underneath them recesses for air chambers such as 5 and 6 while their thick edges are secured to the vamp through stress-resisting means. In this modification, the inflating valves for the air chamber are located in small recesses provided for this purpose inside the sole.

What I claim is:

A sole for shoes comprising a sole body provided with at least one recess and including a thick peripheral flange defining said recesses and provided with a groove along its inner periphery and air chamber fitted in each recess and adapted, when inflated, to project slightly beyond the lower surface of the sole facing the ground and a cover for each air chamber including a wire reinforcement along its edge engaging the corresponding flange groove.

ROBERT GOUABAULT.

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