Jan. 1, 1935. A. SCHADE 1,986,646

FOOT SUPPORT

Filed Feb. 17, 1933

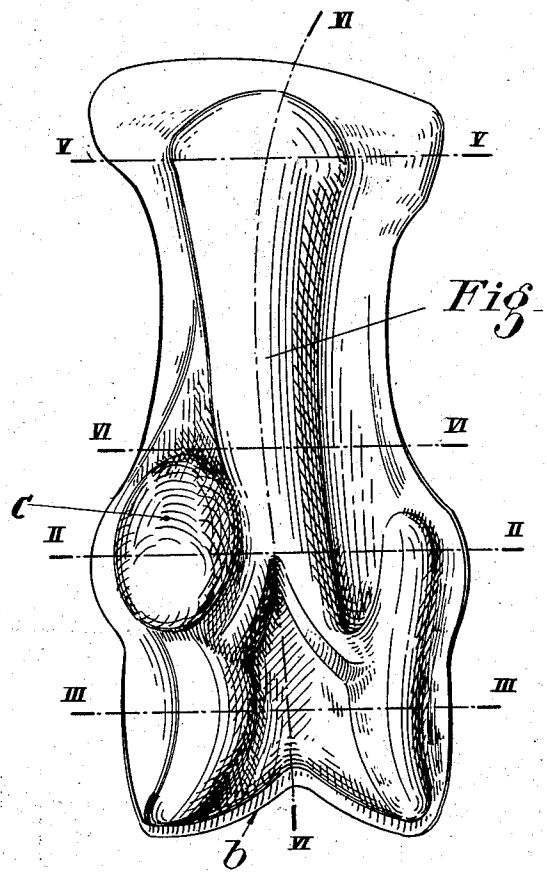

Fig. 1.

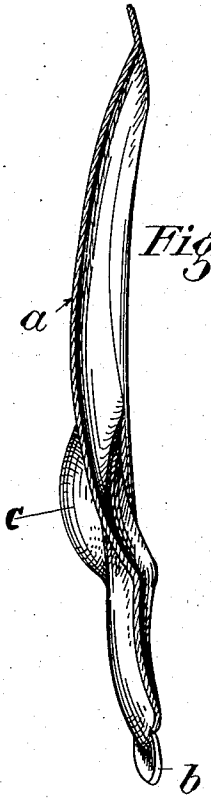

Fig. 6.

Fig. 2.

Fig. 3.

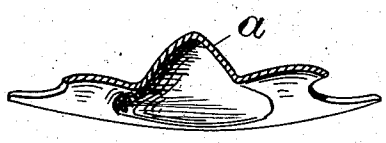

Fig. 4.

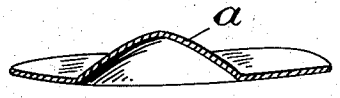

Fig. 5.

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FOOT SUPPORT

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14 Claims. (Cl. 36—71)

This invention relates to a foot support for use with flat feet, and has for its object to improve generally on articles of this kind.

The foot support according to the invention consists of a plate of the known kind supporting the arch of the foot, and extending from the heel to a point in the vicinity of the ball of the foot there is provided in the middle longitudinal direction a narrow rib or elevation. This rib, generally speaking, widens out from the rear towards the front, and preferably terminates in tapered form.

Supports for flat feet are known, which simulate in their curvature the sole of the foot, so that between the support and the skeleton of the foot there is a more or less thick layer of flesh, which does not offer any resistance to the sinking of the bones of the foot. These bones do not find any support until they have displaced the flesh below them and rest on the plate.

The first bones to obtain a support are the heads of the scaphoid, cuboid and fifth metatarsal bones, then the first wedge bone and thereupon the front part of the shaft of the calcaneum. This, however, does not complete the sinking action of the foot, since in the first place the astragalus, on which the load rests, thrusts one-sidedly against the calcaneum and causes the same to move inwards with longitudinal rotary movement, secondly the scaphoid, the cuboid and the fifth metatarsal bone are moved outwards with longitudinal rotary movement and the transverse arch sinks down, and thirdly the joint of the astragalus forces the scaphoid and the inner projection of the calcaneum, between which the same rests in wedge-like fashion, apart, whereby the astragalus is moved inwards with longitudinal rotary movement, the longitudinal arch of the foot additionally sinks, and the form of foot results which may be termed sunk foot. Additional drawbacks associated with the known supports reside in the fact that these are not sufficiently strong, require too much space in the boot or shoe, do not fit tightly in the boot or shoe themselves, or provide the foot with a sufficient hold against slipping and tilting action, and press the ball of the foot upwards. These disadvantages are overcome by the support according to the invention.

The invention will now be described more fully with reference to the accompanying drawing, which shows a support for a right foot.

Fig. 1 is a plan view of the support according to the invention.

Fig. 2 is a section according to the line II—II in Fig. 1, i. e., taken through the highest point of the elevated support for the astragalus.

Fig. 3 is a section according to the line III—III of Fig. 1, and shows how the support encompasses the calcaneum and bears up the same laterally by a flanking rib.

Fig. 4 is a section according to the line IV—IV in Fig. 1 taken through the highest point of the longitudinal rib.

Fig. 5 is a section according to the line V—V in Fig. 1 taken through the widest section of the longitudinal rib.

Fig. 6 is a section according to the line VI—VI in Fig. 1.

On a plate which is similar to the known support and bridges the narrow part of the boot or shoe there is provided a narrow and downwardly widened rib *a*, which extends in the direction of the summit line of the longitudinal arch of the foot running from the heel portion to a point in the vicinity of the ball of the foot, this rib forking off into two branches towards the rear for the purpose of encompassing the calcaneum. These branches curve downwards in saddle-like fashion so as to relieve the toe muscles (inner branch) and to pass below the head of the calcaneum (outer branch). On the outer side of the branch forking off towards the inner side of the foot there is provided a knob-like elevation *c*.

The ribs are adapted in such fashion to the skeleton of the foot that the same, commencing behind the joint of the second metatarsal bone, passes between the first and third metatarsal bones and the internal and external cuneiform bones, and forks off behind the latter, so that the branch situated on the inner side of the foot passes below the parts of the scaphoid and the astragalus situated at the middle of the foot and then below the inner projection of the calcaneum, whilst the branch forking off towards the outer side of the foot passes below the parts of the cuboid located at the centre of the foot, and behind the head thereof below the foremost portions of the shaft of the calcaneum, and then, again bending off into the straight direction, along the outer side of the shaft of the calcaneum. The branches of the longitudinal rib act as flanking supports for the calcaneum (Fig. 3). The outer flanking support is preferably extended towards the front to encompass the head of the cuboid.

The rear part of the plate possesses between the branches of the rib *a* an incision *b* running in a like direction therewith.

The plate itself may consist of any suitable material. Stainless steel has been found to be particularly useful for this purpose. It is then possible to employ a thickness down to .8 mm. for adults. This steel has also been found particularly suitable as immune against attack by perspiration, and also as being a poor conductor of heat.

The essential feature of the invention consists in preventing sinking of the transverse arch of the foot, the axis of which runs in the longitudinal direction of the foot, by means of a special longitudinal rib, which corresponds with the transverse arch of the bone structure of the foot and presses into the flesh, thus immediately supporting the bones.

According to the invention, a governing factor consists in relieving the arch of the foot as far as possible in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, which is accomplished by the provision on a plate, which in the known manner may possess longitudinal and transverse curvature corresponding with the sole of the foot, of a longitudinal rib disposed in the manner illustrated in the drawing.

I claim:

1. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum.

2. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball of the foot and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum.

3. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum.

4. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum.

5. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum, and rearwardly extending to and laterally supporting the calcaneum.

6. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum and rearwardly extending to and laterally supporting the calcaneum, the outer flanking support being extended towards the front to encompass the head of the cuboid.

7. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, the upper face of the plate being further surmounted by a knob-like elevation arranged on the outer side of said branch forking off towards the inner side of the foot, adapted to support the astragalus.

8. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum, the upper face of the plate being further surmounted by a knob-

like elevation arranged on the outer side of said branch forking off towards the inner side of the foot, adapted to support the astragalus.

9. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum and rearwardly extending to and laterally supporting the calcaneum, the upper face of the plate being further surmounted by a knob-like elevation arranged on the outer side of said branch forking off towards the inner side of the foot, adapted to support the astragalus.

10. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum and rearwardly extending to and laterally supporting the calcaneum, the outer flanking support being extended towards the front to encompass the head of the cuboid, the upper face of the plate being further surmounted by a knob-like elevation arranged on the outer side of said branch forking off towards the inner side of the foot, adapted to support the astragalus.

11. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a narrow elevation extending in the middle longitudinal direction of the foot from the heel to a point in the vicinity of the ball and widening out from the rear towards the front and adapted to relieve the transverse arch of the foot in immediate fashion by support at the summit points in the vicinity of the line where the weight is brought to bear, pressing therefore into the flesh, this elevation forking off in two branches towards the rear for encompassing the calcaneum, these branches curving downwards in a saddle-like fashion adapted to relieve the toe muscles and to pass below the head of the calcaneum and rearwardly extending to and laterally supporting the calcaneum, the outer flanking support being extended towards the front to encompass the head of the cuboid, the upper face of the plate being further surmounted by a knob-like elevation arranged on the outer side of said branch forking off towards the inner side of the foot, adapted to support the astragalus, the rear part of the plate possessing between the branches of said longitudinal narrow elevation an incision running in a like direction therewith.

12. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a rib of wedge like cross section extending in the middle longitudinal direction from the heel to the ball and having a form and on said plate a position which corresponds with the transverse arch of the bone structure of the foot and is adapted to press into the flesh, thus immediately supporting the bones.

13. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a rib of wedge like cross section extending in the middle longitudinal direction from the heel to the ball commencing behind the head of the second metatarsal bone and passing between the first and third metatarsal bones and the internal and external cuneiforms and having a form and on said plate a position which corresponds with the transverse arch of the bone structure of the foot and is adapted to press into the flesh, thus immediately supporting the bones.

14. A foot support consisting of a plate the upper face of which possesses the form of the sole of the foot and is surmounted by a rib of wedge like cross section extending in the middle longitudinal direction from the heel to the ball commencing behind the head of the second metatarsal bone and passing between the first and third metatarsal bones and the internal and external cuneiforms and widening out from the rear towards the front and having a form and on said plate a position which corresponds with the transverse arch of the bone structure of the foot and is adapted to press into the flesh, thus immediately supporting the bones.

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