Oct. 19, 1937. A. MACDONALD ET AL 2,096,615

DEVICE FOR VISIBLY INDICATING THE WEIGHT BEARING AREAS OF THE FOOT

Original Filed March 12, 1935 2 Sheets-Sheet 1

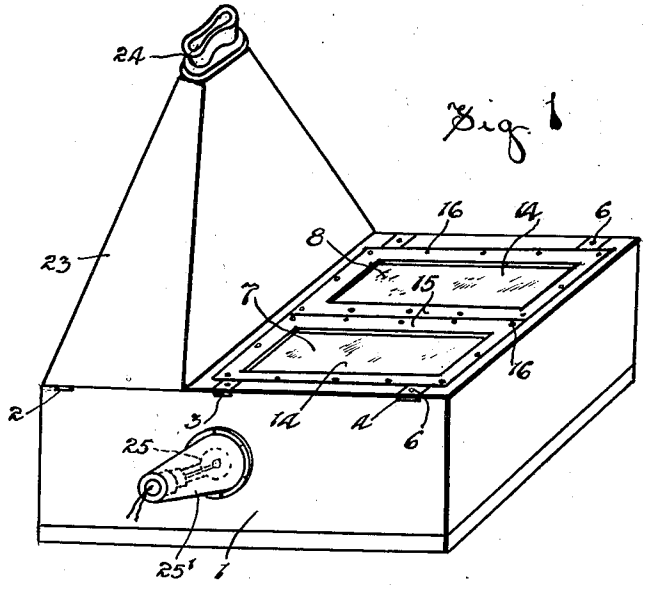


Fig. 1

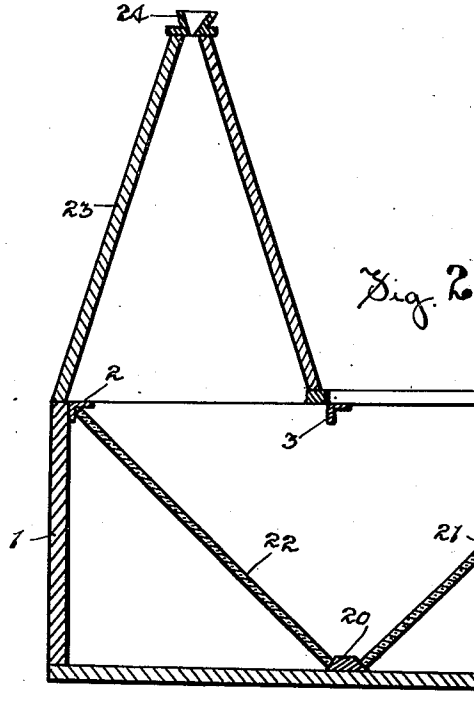


Fig. 2

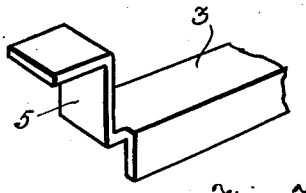


Fig. 3

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DEVICE FOR VISIBLY INDICATING THE WEIGHT BEARING AREAS OF THE FOOT

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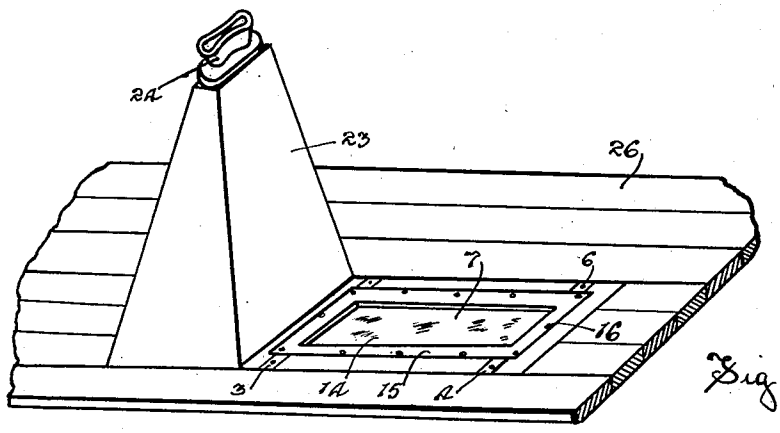


Fig. 8

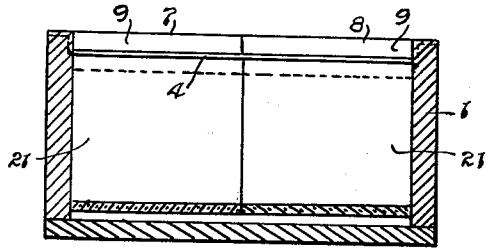


Fig. 4

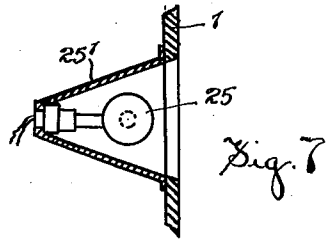


Fig. 7

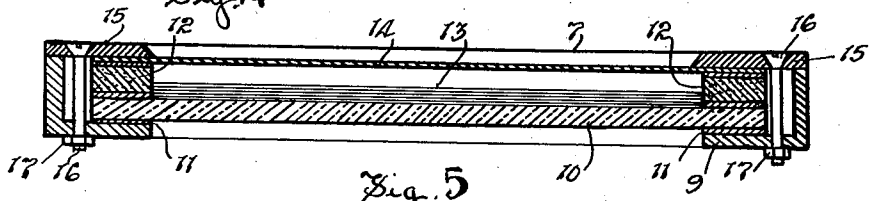


Fig. 5

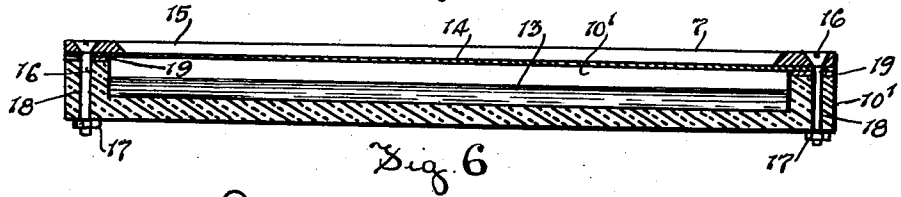


Fig. 6

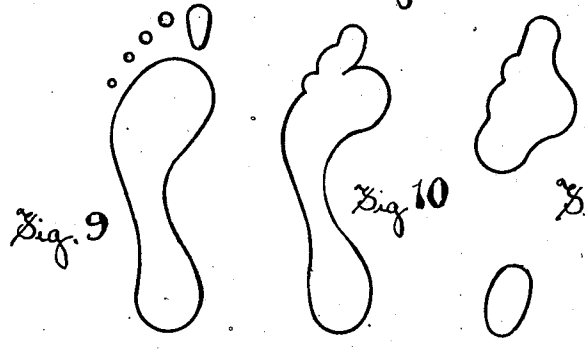


Fig. 9

Fig. 10

Fig. 11

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DEVICE FOR VISIBLY INDICATING THE WEIGHT BEARING AREAS OF THE FOOT

Ainslie Macdonald and Percy W. Neville, Winnipeg, Manitoba, Canada

Application March 12, 1935, Serial No. 10,746
Renewed March 11, 1937

5 Claims. (Cl. 128—2)

The invention relates to devices for visibly indicating the weight bearing areas of the foot, and is particularly valuable for foot specialists and those engaged in the boot and shoe business and where it is very desirable to provide shoes or boots which will give relief to ailing feet and correct the same and also give comfort to normal feet.

The device herein described allows one to quickly obtain an accurate, visible representation of the weight bearing areas of the foot and by carefully observing the same to apply any necessary and proper corrective measures in the boot or shoe to be fitted or if there be no abnormal foot condition to supply the boot or shoe best suited for proper foot comfort. The device is also constructed so that once the foot is removed therefrom the image of the plantar surface of the foot entirely disappears and further such that another image can be immediately created by the application of further foot pressure thereon.

The device also permits of the production of successive images of the plantar surface of the super-imposed foot, if such be desired, such being brought about by simply varying the disposition of the body weight while standing on the device.

Referring now to the drawings;—

Fig. 1 is a perspective view of the device and showing two foot supports.

Fig. 2 is a vertical sectional view through the device and showing the foot supports in side elevation.

Fig. 3 is a perspective view of the end of one of the cross bars used.

Fig. 4 is a cross sectional view through the box or casing and showing the foot supports in end elevation.

Fig. 5 is an enlarged detailed vertical cross sectional view through the foot support.

Fig. 6 is a view similar to Fig. 5 but showing a modified foot support structure.

Fig. 7 is a vertical sectional view through the lamp reflector.

Fig. 8 is a perspective view of the device in a modified form.

Figs. 9, 10 and 11 are views showing foot weight bearing areas of different forms.

In the drawings like characters of reference indicate corresponding parts in the several figures.

We will first describe the device as made with two foot supports, and wherein the person stands with both feet on such supports and an accurate visible representation of the weight bearing areas of both feet is simultaneously obtained.

A box or casing 1 is supplied having an open top and the sides of the box carry similar elevated cross bars 2, 3 and 4 utilized to support parts later described. The bars shown are of angle iron cross section and have their ends formed to provide end hangers 5 fastened as by screws 6 to the sides of the box.

The bars 3 and 4 carry similar rectangular foot supports 7 and 8 which lie side by side within the open top of the box and on which one stands when using the device, there being one foot on each support.

The foot supports are identical so that the description of one will suffice. Each foot support comprises an open centered rectangular frame 9 of angle iron cross section which receives and supports a flat, rectangular, transparent plate 10, such as of glass, the plate being sufficiently strong to support the entire weight of one standing thereon. A gasket 11 is placed between the plate and the frame and to the edges of the plate we cement a resilient spacing element 12 which forms side and end walls to confine a fluid 13 poured onto the plate. The fluid is preferably coloured and entirely covers the upper face of the plate.

A resilient, horizontally disposed fluid proof membrane or cover 14 is cemented to the top face of the spacing element and entirely encloses the fluid, the membrane being preferably stretched so that it will always have a natural tendency to resist deflection from the horizontal plane.

An open centered, rectangular pressure plate overlies the edges of the membrane and suitably disposed bolts 16 are utilized to fasten the plate to the lower flange of the frame 9. By tightening up the nuts 17 of the bolts, one firmly holds the various parts together and obviously the fluid is retained in the pan like structure, the bottom of which is transparent and the top of which is covered by the membrane.

In Fig. 6 a modified arrangement of the foot support is shown. Here the transparent plate is provided with integrally formed side and end walls 10' and the pressure plate is fastened to the walls by the bolts 16 which pass through suitable holes 18 provided in the walls. The edges of the membrane are caught between the plate and the tops of the walls and a suitable cement 19 is introduced between the membrane and the walls to insure of a fluid tight joint.

To the bottom of the box we secure a stop strip 20 located approximately vertically below the cross bar 3 and the strip engages the lower edges of two similar reflectors or mirrors 21 placed side

by side and having their upper edges resting on the bar 4. The mirrors are inclined at an angle of approximately forty five degrees and underlie the foot supports and they directly oppose a further pair of reflectors or mirrors 22 which have their lower edges engaging the stop strip and their upper edges resting against the cross bar 2.

The end of the casing containing the mirrors 22 supports an upstanding, tapered housing 23 provided at the upper, small end with a sight opening 24, the arrangement being such that one looking through the sight opening, sees on the reflectors or mirrors, the reflected images of the weight bearing areas of the feet of one standing on the foot supports, it being understood that the interior of the box is highly illuminated by the electric lamp 25 mounted in the lamp case 25'.

It will be readily seen that if one stands on the foot supports, the membranes will yield under the pressure of the feet and that the feet will come to rest on the transparent plates with the full weight of the body carried thereby. The coloured fluid will be entirely displaced at the areas of greatest foot pressure and accordingly one would see, if looking upwardly through the transparent plates, the actual weight bearing areas of the feet, which areas are sharply outlined by the coloured fluid. By employing the reflectors or mirrors the images of the weight bearing areas of the feet are plainly visible at the sight opening.

One can stand on the foot support with the naked, stockinged or booted foot and in all cases the images thereof are plainly visible at the sight opening. In actual practise one will usually remove his boots or shoes but not his stockings. The membranes will obviously prevent the stockings from coming into contact with the liquid or fluid used.

In Figs. 9, 10 and 11 we have shown the weight bearing areas of three different types of feet and areas such as these would be plainly visible at the sight opening of our device, if individuals with such types of feet stood on either foot support. In considering these figures it is to be understood that the lines shown, which confine the weight bearing areas, are actually formed in our device, by the coloured fluid in contrast with those areas vacated by the fluid and which latter areas are actually the weight bearing areas of the transparent plates.

In Fig. 8 we have shown a modified arrangement of the device. In this there is only one foot support 7 and it is placed at floor level so that the one using the device can stand naturally with one foot on the foot support 7 and with the other foot on the floor 26. The box is below floor level and contains the mirrors arranged as hereinbefore described and permitting of the image of the weight bearing areas of the foot being seen at the sight opening. By first placing one foot on the foot support and then the other, the weight bearing areas of both feet can be clearly observed.

It is particularly to be noted that the means herein employed for visibly indicating the weight bearing areas of the foot, is the major feature of the invention. Obviously one could dispense with the box, mirrors, sight opening and housing and still use the support herein described to give a visible representation of the weight bearing areas of the foot. To do this it is only necessary that the foot support be supported so that one can stand on it naturally and that another be able to view it from the underside.

What we claim as our invention is:—

1. A foot support comprising a shallow container having a colored fluid therein, the bottom of the container being flat and transparent and adapted to support the weight of the foot and the top of the container covered with a resilient material impervious to the fluid and depressible to the bottom of the container under the weight of the applied foot.

2. A foot support comprising, a transparent, flat, foot supporting plate, a resilient membrane above the plate and depressible to contact with the plate under the weight of the applied foot and a colored fluid retained between the plate and the membrane.

3. A foot support comprising, a transparent, flat, foot supporting plate having retaining side and end walls, a resilient membrane above the plate and carried by the side and end walls and depressible to contact with the plate under the weight of the applied foot and a colored fluid covering the upper face of the plate, said membrane being impervious to the fluid.

4. A foot support comprising, a flat, transparent plate for supporting the foot, having retaining side and end walls, a colored fluid covering the upper face of the plate, a resilient membrane overlying the fluid and impervious to the fluid, and with the edges resting on the walls, said membrane being depressible to contact with the plate under the weight of the applied foot and means for firmly securing the edges of the membrane to the walls.

5. In combination, a flat transparent foot supporting plate, a colored fluid retained on the upper surface of the plate and adapted to be displaced by the foot when the latter is supported by the plate and a resilient membrane interposed between the foot and the fluid, said membrane being impervious to the fluid.

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