Sept. 27, 1927. 1,643,626

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APPARATUS FOR OBSERVING THE VARIATION OF THE SOLE TREADING SURFACE WHEN THE FOOT IS UNDER LOAD AND NOT UNDER LOAD

Filed Jan. 10, 1927

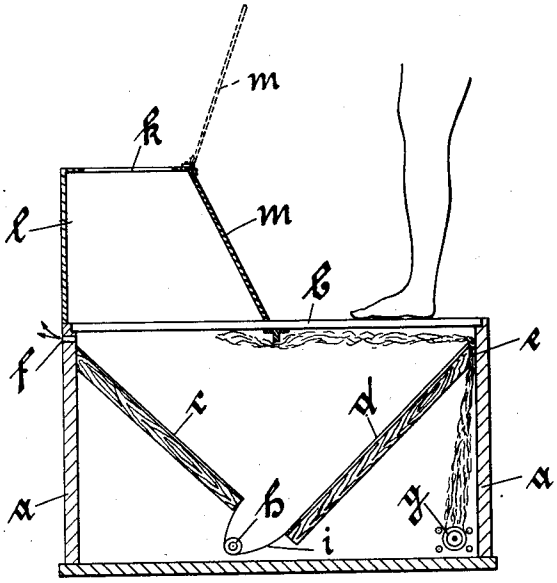


Fig: 1

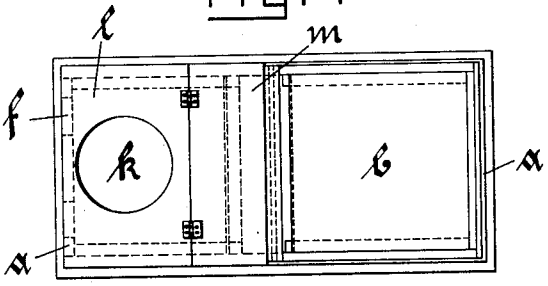


Fig: 2

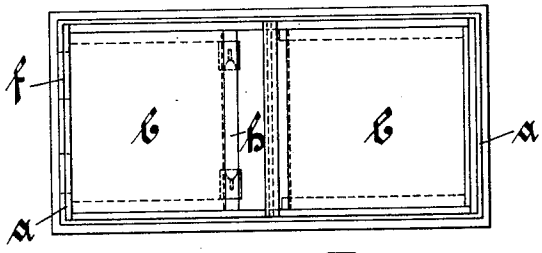


Fig: 3

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Patented Sept. 27, 1927. 1,643,626

UNITED STATES PATENT OFFICE.

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APPARATUS FOR OBSERVING THE VARIATION OF THE SOLE TREADING SURFACE WHEN THE FOOT IS UNDER LOAD AND NOT UNDER LOAD.

Application filed January 10, 1927, Serial No. 160,274, and in Germany May 29, 1925.

Apparatus for observing the variations of the sole treading surface when the foot is under load and not under load are known. They consist of an open frame which as a tread surface, supports a strong transparent glass plate under which are arranged two mirrors set at an angle of 45° thereto and at a right angle to one another, which reflect the reflected image of the foot treading surface upwardly. As daylight alone was frequently insufficient for an examination such apparatus were provided with lateral lamps for illuminating the transparent tread plate from underneath.

For observing the sole of the foot or the foot treading surface by means of such apparatus the coloration of the separate parts of the sole of the foot plays the main part. Parts on which the highest pressure is exerted are more or less of a yellow white by reason of the absence of blood. Such pressure surfaces merge into such sections of the sole of which the colours are intermingled with a light red, indicating partial absence of blood of the parts of the sole of the foot which are not under the full pressure of the load. To these parts are finally connected those surfaces of the sole and the edges of the sole which are not under the pressure of any load and which bear lightly on the glass tread plate. The observation therefore depends on the varying degree of the displacing of the blood from the various sections of the sole of the foot by the pressure of the load acting thereon at any time. The images which are thus exhibited to the eye of the observer are, however, not absolutely satisfactory as the more or less large absence of blood exhibited in the sole surface of the foot is partly due to the mere contact between the sole of the foot with the cold tread plate.

Also the illuminating lamps arranged laterally for the transparent tread plate influence the observation in an undesirable manner as the rays therefrom cross one another and they are also partly visible in the eye of the observer. Also the co-operation between the natural light and artificial light unfavorably influences the observation. To this may also be added the complete shading of the eye of the observer and the possibility of the continual observation of the person examined who by leaning from his normal position thus unintentionally varies the loading of the foot accordingly. These faults are eliminated by the inspection apparatus forming the subject of the invention and the inspection by means thereof gives the actual conditions free from error and also inspection images which are more efficient and complete.

The action of external light is prevented by completely enclosing the apparatus. The tread plate is constantly heated to body temperature and directly illuminated from underneath by a base source of light which is invisible to the eye of the observer. The observer's eye is shaded by a separate closed casing member with inspection opening, whilst the wall of the casing which is turned towards the person who is being examined is wholly or partly folded back or completely removed after the inspection has been completed so as to give the person examined the opportunity of being able to see the image of the sole of his foot from his position.

An example of construction according to the invention is illustrated in the accompanying drawings wherein:—

Figure 1 is a longitudinal section of the apparatus.

Figure 2 is a plan view thereof and

Figure 3 is a plan after removing the observing casing.

The casing *a* of the apparatus closed on all sides is provided with the sufficiently strong tread plate *b* of glass or the like and the reflecting mirrors *c* and *d* arranged underneath at suitable angles, the two mirrors being arranged so as not to extend completely under the tread plate. The mirror *d* also has its upper edge removed from the rear wall of the casing so that a passage *e* remains under the tread plate. In the opposite wall of the casing ventilation holes *f* may be provided in suitable positions and under the mirror *d* the walls of the casing or one thereof may be provided with air inlet holes. The tread plate *b* preferably rests in the middle on a cross bar which at the same time divides the tread field and the observation field of the tread plate and may also serve as a storing wall for the heating stream. *g* is a heating body, preferably an electric tubular heating body, of which the heating stream passes through

the slot *e* under the tread plate *b* for the purpose of heating this and then passes out through the holes *f*. *h* is the tubular lamp, preferably arranged at the bottom and shaded from the eye of the observer for illuminating the tread plate. The lamp is provided with a reflector *i* of which the focus is behind the mirror *c* which is shortened by an amount equal to the width of the reflector screen. By means of this lamp arrangement the light rays are projected with full strength directly from below against that part of the tread plate upon which the feet are placed. The image of the sole of the foot is produced sharply and does not show any fogging. For shading the eye of the observer there is provided a casing *l* which is completely closed with the exception of the inspection opening *k*, the inclined wall *m* of the casing turned towards the person who is being examined being capable of being wholly or partly thrown open on hinges when the images of the soles of his feet are to be made visible to him in his position after the examination has been completed. During the examination itself he is not to see these as the person inspected is readily inclined to lean forwardly and thus not only alter his position but also the distribution of the load on his foot so that an accurate image of the soles of the feet would not be obtained. The wall *m*, instead of being wholly or partly foldable may also be wholly or partly removable.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. Apparatus for observing the variations of the sole treading surface when the foot is under load and not under load, comprising a transparent tread plate, two mirrors arranged at right angles to each other and at 45° in relation to the tread plate to reflect the reflected image of the sole treading surface upwardly, and a dark casing of which the tread plate forms the cover and a source of light arranged in the bottom of the casing and invisible to the eye of the observer.

2. Observing apparatus according to claim 1, characterized by the fact that in the space under one of the two mirrors there is provided a heating body and said mirror terminates short of the rear wall of the casing and of the tread plate so that a passage is formed for the heating stream and at other suitable positions of the casing there are provided inflow and outflow openings.

3. Observing apparatus according to claim 1, characterized by the fact that above the observing side of the tread plate there is provided a closed casing having an inspection aperture for the observer, the inclined side of said casing turned towards the person who is being examined being adapted to be wholly or partly turned back or opened or removed.

In testimony whereof I affixed my signature.

JOSEPH MAY.