Dec. 3, 1946. G. D. WOOD ET AL 2,412,112

CHAIR SEAT

Filed May 15, 1941

Fig. 1.

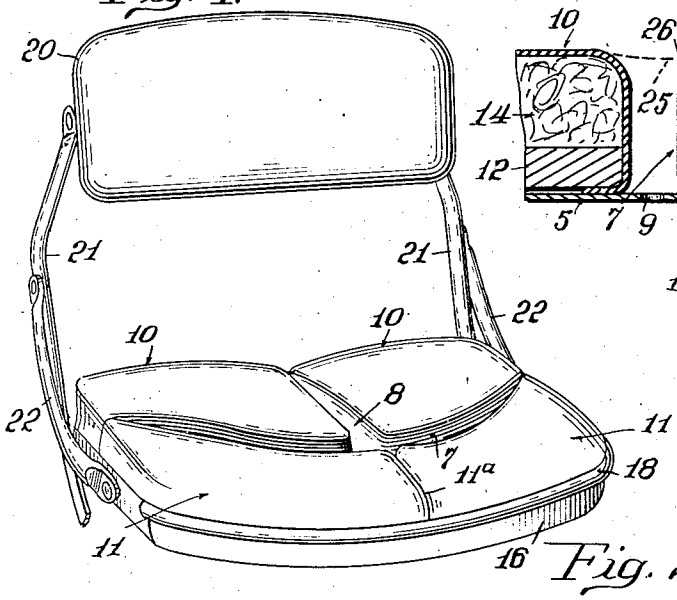


Fig. 4.

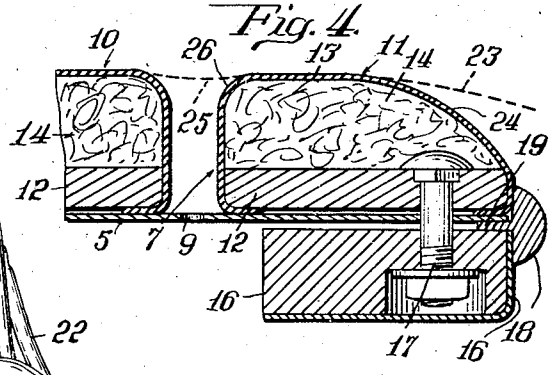


Fig. 2.

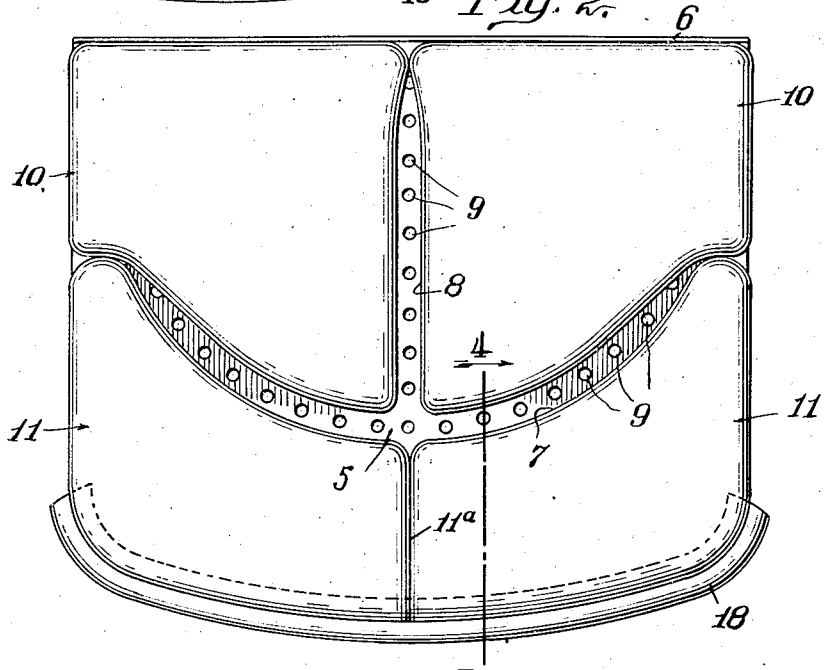
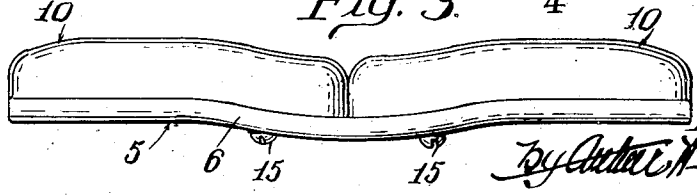


Fig. 3.



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CHAIR SEAT

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7 Claims. (Cl. 155—184)

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This invention relates to improvements in chair seats and it consists of the matters hereinafter described and more particularly pointed out in the appended claims. The present invention is more especially concerned with a chair seat of the general type disclosed in Patent No. 2,061,054, of November 17, 1936.

One of the objects of the invention is to provide a chair seat of this kind, which is more comfortable to sit upon for longer periods of time, which provides a cooling action, and which tends to lessen or modify fatigue by promotion of a posture that keeps the weight over the bony structure which does not tire so readily as the muscles do.

Also, it is an object of the invention to so shape and arrange the body engageable parts of the seat as to provide a better support for the pelvic bones of the occupant, which will not cause said bones to spread laterally and strain the ligaments therebetween, so that the ligaments remain in a more comfortable condition while the occupant is seated.

Again, it is an object of the invention to provide a chair seat which has a ventilating action when occupied, whereby certain air movements occur which promote evaporation of moisture from the clothing of the occupant, thus acting to cool the occupant and at the same time tending to lessen or modify unpleasant body odors which might otherwise obtain.

Furthermore, it is an object of the invention to provide a seat for a chair having cushion-like body engageable portions disposed to define a channel extending transversely of the seat which cooperate with parts of the body in assisting to prevent undue forward sliding movement of the body on the seat and thereby aiding in maintaining the desired relationship of the body back to the chair back and seat whereby correct body posture is maintained.

The above mentioned objects of the invention, as well as others, together with certain advantages afforded thereby will more fully appear as the specification proceeds.

In the drawing:

Fig. 1 is a perspective view of a chair seat embodying the preferred form of the invention.

Fig. 2 is a top plan view of the seat on an enlarged scale.

Fig. 3 is a rear end view in elevation of the seat.

Fig. 4 is a vertical sectional view through the seat, on a further enlarged scale, as taken on the line 4—4 of Fig. 2.

Referring now in detail to that embodiment of

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the invention illustrated in the drawing, 5 indicates as a whole a rigid seat bottom of desired outline shape and made of suitable material, such as sheet metal. As shown herein the seat bottom, which is substantially rectangular in plan, is curved forwardly at the front, as best appears in Figs. 1 and 2.

The side portions of the seat bottom are relatively flat and extend from front to rear, while the mid portion of the seat bottom is slightly concaved transversely and extends from front to rear, as best appears in Fig. 3. At the rear, the seat bottom has an upturned flange 6, which materially stiffens the same.

The seat bottom mentioned is provided on its upper surface with body engageable portions arranged in a manner to provide a channel or duct therebetween. Said channel includes a generally laterally extending portion 7 and a second portion 8 which is disposed midway between the sides of the seat and opens at one end into the portion 7 so as to communicate therewith. The channel portion 7 curves rearwardly and laterally from the front central portion of the seat toward and terminates short of the sides of the seat so that this channel portion is closed at its ends.

The channel portion 8 terminates at its rear end short of the rear edge of the seat as a whole, so that the said rear end of the channel is closed. In that area of the seat bottom as outlined by the channel portions 7 and 8 are spaced openings 9—9 for the circulation of air into and out of the channel portions when the seat is occupied. The body engageable portions previously mentioned are preferably cushioned or upholstered and as shown include a pair of rear end corner sections 10—10 and a front section 11 that extends from one side to the other of the seat. This front section is shown as made in two parts separated by a seam 11a but this is done for production purposes only as the seam performs no particular function.

When the body engageable portions 10—10 and 11 are cushioned, each one of them includes a wooden base 12, a covering 13 and an intermediate padding 14, the covering having its margins turned under and secured to the base so as to enclose the padding. The said body engageable portions are secured in place upon the seat bottom by means of screws 15 (see Fig. 3) which pass up through the seat bottom from below and are threaded into the base of the respective body engageable portions.

As is apparent, the adjacent parts of the body engageable portions 10—10 slope toward each other at the channel portion 8. The front edge

portion of the body engageable portion 11 is formed so that its top surface slopes toward the front edge of the seat as a whole.

As in the patent before referred to, a wooden finishing rail 16 may be located on the under side of the front end portion of the seat bottom and this finishing rail is secured in place by bolts 17 and associated nuts, as best shown in Fig. 4. A bumper strip 18 is provided along the front edge of the seat and this bumper strip has a flange 19 which is clamped in place between the front margin of the seat bottom and the finishing rail. At the rear of the seat is a back rest 20 and this back rest is supported from the sides of the seat by suitable arms 21 and braces 22, as best appears in Fig. 1.

When the seat is occupied, those parts of the occupant's body engaged on the portions 10—10 span or bridge the channel portion 8 which is centrally located and a part of the channel portion 7. Due to the slope of the inner margins of the body engageable portions 10—10 toward each other, the pelvic bones of the body are caused to approach each other and are not caused to spread laterally, which would place associated muscles and ligaments under tension. Therefore, these muscles and ligaments are not so prone to become fatigued, and greater sitting comfort is available for the occupant.

In order that correct sitting posture may be had it is necessary that the spine be maintained in its normal physiological curve. Also, that the coccyx be free from pressure. Again, the popliteal space (part directly back of knee joint) should be out of engagement with the edge of the seat in order to obviate pressure on nerves and blood vessels which are exceptionally vulnerable to pressure at that point. The seat of the present invention is designed in a manner to perform these various and apparently conflicting functions. Thus the seat, as a whole, is not of too great depth so that the coccyx occupies a position rearwardly of the rear edge of the seat where it is free from pressure, the weight of the body resting primarily on the bottoms of the pelvic bones. With the coccyx so located, the trunk will occupy a substantially upright position with the back limited in its rearward movement by the back rest.

By reference to the dotted line 23 (Fig. 4), which dotted line is intended to indicate the underside of the upper part of the leg, it will be observed that the downward slope 24 of the seat at the forward edge spaces the same away from the popliteal space so that undesired pressure on the nerves and blood vessels at this vulnerable point cannot occur.

When the weight of the body rests on the bottoms of the pelvic bones, the spine is disposed in its normal physiological curve and undue pressure on nerves and blood vessels is prevented. If this relationship can be maintained, correct posture results and fatigue is greatly reduced.

If the occupant, even while maintaining contact with the back rest, and initially occupying an upright position, permits the seat engaging part of the body to slide forward, the pelvis is thereby caused to shift from its original position. In this shifting movement, the pelvis is caused to drop down at the rear and rise at the front. The end result is to cause the body to assume a slumped improper posture. In this condition, the weight of the body no longer rests on the bottoms of the pelvic bones, as should be the case, but rearwardly of the bottoms. Also, the coccyx, instead of being well elevated, as it should be, occupies a low position where it is subjected to pressure from below.

Referring again to Fig. 4, it will be observed that the fleshy part of the legs over the transverse channel 7 tends to be depressed into the channel, as indicated at point 25. Therefore, the edge 26 of the front section 11 acts as an abutment. Should the thighs slide forward, the decrease in comfortable sitting posture reminds the occupant to return to the original proper position on the seat. Thus, the arrangement is such that once occupant arranges himself properly, as before described, the chair parts function to assist in maintaining that proper relationship.

It should be pointed out that the transverse channel 7 is spaced rearwardly from the front edge of the seat so that the fleshy part of the legs are arranged over the channel so that there is no danger of imposing undue pressure on the blood vessels and nerves because they are well cushioned at that point.

The construction described not only influences the posture of the occupant, but it tends to discourage slumping which is a contributing cause of fatigue. Should the occupant knowingly or otherwise slump while sitting on the seat, it urges his return to that erect position which is best for his comfort and well being.

While in describing our invention, we have referred in detail to the form, arrangement and construction of the parts involved, the same is to be considered in the illustrative sense only, so that we do not wish to be limited thereto except as may be specifically set forth in the appended claims.

We claim as our invention:

1. A chair seat embodying therein a seat bottom, body engageable means supported upon said seat bottom and arranged to provide a channel in the seat bottomed by an associated part of the seat bottom in line therewith, said channel having parts one of which curves rearwardly and laterally from the front central portion of the seat toward the rear portion of opposite sides of the seat and another part of which is disposed between the sides of the seat and opens at one end into the first mentioned part of the channel and extends away therefrom toward the rear of the seat, the central portion of said one part of said channel being of such width as to permit the depression of the fleshy parts of the legs of the occupant thereinto so that the front edge of said channel part functions as an abutment sensible to said leg parts to remind the occupant to return to proper position on the seat.

2. A chair seat embodying therein a seat bottom, body engageable means on the seat bottom and including portions at the rear side parts of the seat bottom and terminating short of the front of the seat, said portions being spaced apart at their adjacent sides so as to form a channel therebetween which is disposed on the medial line of the seat from front to rear, said body engageable means including a portion at the front of the seat and spaced from the front of said first mentioned portions to form a channel therebetween extending substantially transversely of the seat from side to side thereof, the first mentioned channel opening at its front end into the second mentioned channel at a point between its ends, said channels being bottomed by parts of the seat bottom in line therewith, parts of the body engageable means adjacent the second mentioned channel sloping downwardly toward each other at said part of said second mentioned channel.

3. A substantially rectangular chair seat embodying therein a seat bottom, a pair of body engageable members disposed each upon an associated rear end corner of the seat bottom, said members terminating at their front ends short of the front of the seat and spaced apart but sloping towards each other at their adjacent edges to leave a channel in the median rear portion of the seat, body engageable means at the front of the seat bottom and extending from side to side of the seat, said means being spaced at its rear edge from the front edge of said body engageable members to leave a channel, the first mentioned channel opening into the second mentioned channel substantially at its mid portion.

4. A chair seat embodying therein a seat bottom, a plurality of body engageable members supported upon the rear side parts of the seat bottom and terminating short of the front of the seat, said members being spaced apart at their adjacent edges so as to form a channel therebetween which is disposed on the median line of the seat from front to rear, said members having top surfaces inclined upwardly from said channel toward the sides of the seat, body engageable means on the seat bottom at the front of the seat and spaced from said body engageable members to form a channel therebetween extending substantially transversely of the seat from side to side thereof, the first mentioned channel opening at its front end into the mid portion of the second mentioned channel, the top surface of said body engageable means, in at least the central portion thereof, being inclined at the front margin toward the front of the seat.

5. A chair seat having a generally transversely disposed channel therein spaced substantially

rearwardly from the front edge of the seat, at least the front central portion of the channel being closer to the front edge of the seat than to the rear edge, the end portions of said channel extending toward the rear end of the sides of the seat and the central portion of the channel being of such width as to permit the depression of the fleshy part of the legs of the occupant thereinto so that the front edge of the channel functions as an abutment sensible to said leg parts to remind the occupant to return to proper position on the seat.

6. A chair seat having a plurality of channels therein, one of said channels extending generally in a direction transversely of the seat and the other generally in a direction toward the rear of the seat and disposed substantially centrally between the sides of the seat to form two body engageable seat portions having parts that slope downwardly toward each other at said other channel.

7. A chair seat having a plurality of channels therein, one of said channels extending generally in a direction transversely of the seat and terminating short of the sides of the seat and the other extending in a front to rear direction and opening at one end into the other of said channels and stopping short of the rear of the seat, said channels dividing the seat into a front portion and two rear portions, the front portion sloping downwardly toward the front edge thereof, and the two rear seat portions having parts that slope downwardly toward each other at said other channel.

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