

# United States Patent [19]

Niehenke

[11] 3,775,588

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## [54] HEATED PRESS

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[51] Int. Cl. .... **H05b 1/00**

[58] Field of Search..... 219/243, 245, 254,  
219/258, 541, 530, 538; 38/16, 17, 77.5,  
77.83, 89; 100/93 P

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[57]

## ABSTRACT

A pants press has two press plates each having a rigid base plate and a pressure plate connected thereto. A heating element is interposed between the two latter plates and a heat insulator is provided between the heating element and the base plate.

17 Claims, 6 Drawing Figures

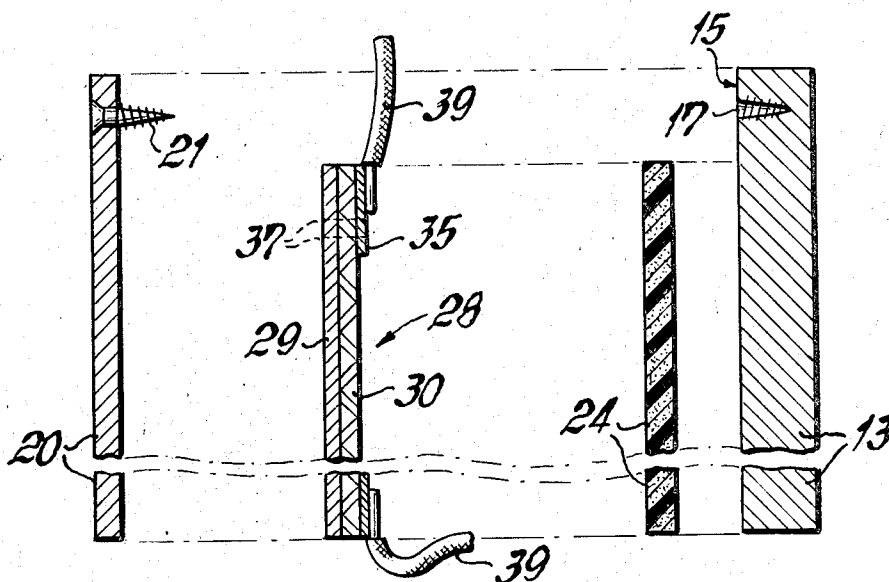


FIG. 1

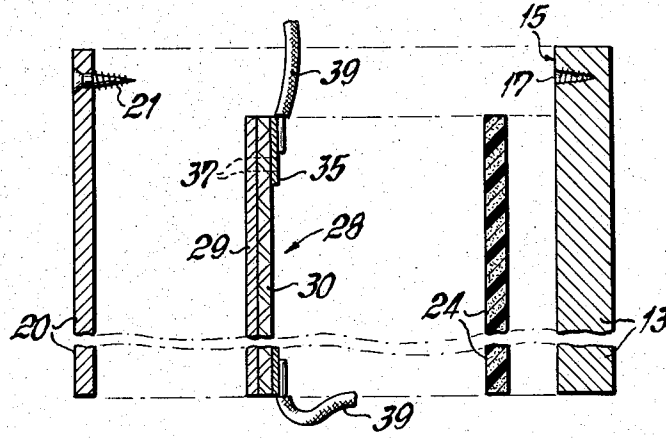


FIG. 2

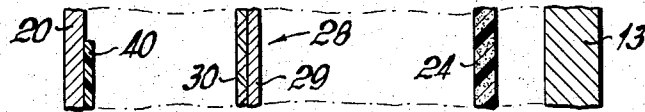


FIG. 3

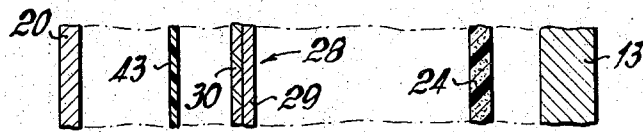


FIG. 4

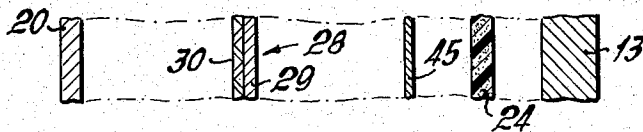


FIG. 5

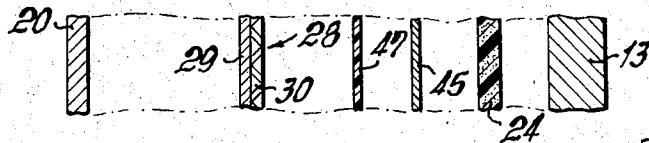
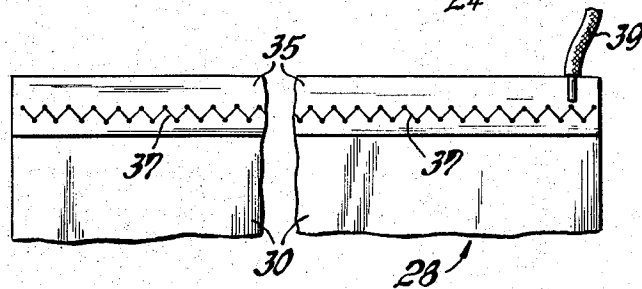


FIG. 6



## HEATED PRESS

## BACKGROUND OF THE INVENTION

The present invention relates to apparatus for ironing articles of apparel and, more particularly, to apparatus for ironing of trousers and slacks.

It is already known to provide apparatus for ironing articles of apparel wherein the article is disposed between two plate members which press against the article. According to one pants press of this type, disclosed in German utility model (Gebrauchsmuster) No. 7,028,888, an electrically isolating, heat resistant layer is provided between the base plate and the pressure plate of the press. An electrically resistive heating grill and an electrically isolating heat resistant foil is also placed between the base plate and the pressure plate. Although the functioning of this known pants press is relatively satisfactory, the construction cost of such a pants press is high. Additionally, the utilization of the electric resistance heating grill which is in the form of a spiral results in a relatively large or bulky construction. Also, the utilization of the electrical resistance heating grill has contributed to the high cost of the prior art presses.

## SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a heated press which does not suffer the disadvantages known in the prior art for presses of the same type.

It is another object of the present invention to provide a heated press which is simple in construction and economical to manufacture.

It is still another object of the present invention to provide a press of the type under discussion which results in thin press plates which offer special safety to the users against electrical shock.

It is a further object of the present invention to provide a heated press which provides a sturdy construction which is capable of prolonged use without likelihood of frequent malfunction or breakdown.

With the above objects in view, the present invention for a heated press, particularly for pressing articles of clothing, comprises two press plates movable relative to each other between an open rest position and a closed working position and adapted to receive between themselves in the open position an article to be pressed in said closed position of said press plates. At least one of said press plates comprises a rigid base plate, and a pressure plate substantially coextensive with said base plate and connected thereto. Heating means for generating heat between said base and pressure plates is provided. Heat insulating means is provided between said heating means and said base plate to prevent the loss of heat through the latter, said base and pressure plates being arranged so that when the press is closed, said pressure plate is in contact with the article to be pressed.

In accordance with a presently preferred embodiment, both press plates are similarly constructed. Also, said heating means comprises an electrically isolating mounting layer, and a resistive heating layer. Said resistive heating layer has two opposite edges, further comprising two electrical conductors each connected to another of said opposite edges to provide good electrical conduction therebetween. Each electrical conductor is arranged to be connected to another terminal of a

source of electrical energy to thereby cause current to flow through said resistive heating layer from one edge thereof to the other and causing the same to become heated. According to another feature of the present invention, said electrical conductors are connected to said resistive heating layer by a zig-zag sewing stitch. Also, suitable heat reflecting means and electrical isolating means are provided to prevent electrical shocks to the user as well as to preserve the heat generated and to direct the latter away from the base plate and towards the pressure plate.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmented cross sectional view of a press plate in accordance with the present invention, shown exploded for facilitating the description thereof;

FIGS. 2-5 are fragmented cross sectional views similar to that in FIG. 1, showing modifications of the arrangement shown in FIG. 1; and

FIG. 6 is a front elevational view of the heating element as shown in FIG. 1.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring first to FIG. 1, this shows a heated press plate, in its exploded fragmented view, in accordance with the present invention. The press plate comprises a rigid base plate 13, for example, a gripping or clamping plate, the base plate having an outer periphery in the form of a rim 15 which is provided with screw holes 17 which are spaced from one another along the periphery.

In order to facilitate the description of the press plates in accordance with the present invention, namely the press plates as shown in FIGS. 1-5, these have been shown in their exploded views. However, in the assembled state of the press plates, the various layers which are shown in the Figures are in intimate contact with one another. To obtain such intimate contact, a pressure plate 20 is provided about its periphery with screws 21 which are positioned to correspond with the screw holes 17. In the assembled state, the screws are screwed into the screw holes and the two exterior plates are in this manner drawn together in pressure contact relationship.

Placed adjacent to the base plate 13 is a heat insulating plate 24 which advantageously can withstand temperatures over 80° C. Such a heat resistant material can, for example, consist of polystyrene foam material or known materials such as asbestos. One important function of the heat insulator 24 is to prevent heat loss in the direction of the base plate 13 while electrically isolating the base plate against any electrical voltages which may appear on an electrical resistance heating element, generally designated by the reference numeral 28.

The heating element 28 is shown in FIG. 1 to consist of an electrically isolating mounting layer 29, e.g., from paper, and an electrically conductive heating layer 30.

The thickness of the heat insulator 24 and the resistance heating element 28 are shown out of proportion and are, in fact, grossly exaggerated to facilitate the explanation and illustration of the invention. In practice, however, these intermediate elements are of substantially smaller dimensions, this permitting a compact, thin and light-weight press plate to be obtained.

For example, the total thickness of the heating element 28 is, as presently contemplated by the present embodiment, from 0.2 to 0.25 millimeters. Similarly, the contemplated dimensions for the resistance heating element 28 are approximately 35 by 55 centimeters. The heating element 28 is connectable to a source of A. C. voltage and when driven by a 220 volt line voltage, the power consumption or dissipation in the heating element is approximately 180 watts.

Referring to both FIGS. 1 and 6, at the upper and lower edges of the heating element 28 there are provided connectors 35 which, in accordance with the presently described embodiment, are made from copper foil. The connectors 35 are connected to the resistive heating layer 30 by means of a zig-zag sewn stitch 37. The connection is such as to insure good electrical conduction between the connectors 35 and the electrical conductor or resistive heating layer 30. Each of the connectors at opposite ends of the resistive heating layer 30 is connectable with one pole of a driving source of voltage through conductors, e.g., 39. The connectors 35 are typically 0.15 millimeters thick. The dimensions which have been described above are merely illustrative and by no means represent critical values which must be adhered to in order to achieve the advantages of the present invention. It is preferred, however, for the purposes of the present invention, that the various sections illustrated in FIG. 1 are made as thin as possible so as to decrease the overall thickness and weight of the press plates.

Still referring to FIG. 1, this shows, as noted above, the layers of the layered construction of the press plate. The electrical safety to the user against shocks is guaranteed with the present construction, particularly when the base plate 13 and/or the heat insulator 24 and/or the pressure plate 20 are additionally electrically isolating.

With the embodiment shown in FIG. 1, electric voltage appears on the resistive heating layer 30. Thus, the base plate 13 is isolated from electrical voltages by the heat insulator 24, which in this embodiment is also selected to be electrically isolating. On the other hand, the pressure plate 20 is isolated from the electrical voltage by the provision of the mounting layer 29 which has been described to be made from an electrically isolating material such as paper.

Another embodiment is illustrated in FIG. 2 wherein the same reference numerals representing similar parts have been kept identical to those utilized in FIG. 1. The arrangement here shown is substantially similar to the basic arrangement except that the heating element 28 has been reversed so that the resistive heating layer 30 now faces the left as seen in the Figures as opposed to facing to the right in FIG. 1. Accordingly, the mounting layer 29 now appears on the right-hand side, or facing the base plate 13. Because the electrically isolating mounting layer 29 is no longer provided adjacent to the pressure plate 20 for preventing the appearance of electrical voltages thereon, an additional electrical isolator must now be provided. In accordance with the

embodiment shown in FIG. 2, a layer 40 is provided on the pressure plate 20, e.g., such as a coat of paint, a covering or any other electrically isolating material. The embodiment as shown in FIG. 3 utilizes, instead of a coat of isolating material deposited directly on the pressure plate 20, an intermediate layer 43 which is, similarly electrically isolating. Although any suitable electrically isolating material may be utilized for the purpose, the intermediate layer 43 can advantageously be made from polyethyleneterephthalate.

To increase the efficiency of the press plate, namely by reducing the heat losses in directions where they serve no useful purpose, several additional layers can be inserted into the press plate. Thus, in FIG. 4 a heat reflecting surface 45 made, for example, from a metal foil, e.g., from aluminum foil, is interposed between the heat insulator 24 and the heating element 28. It will be appreciated that with this arrangement, any heat energy which is directed in the direction of the base plate 13 will be reflected by the metal foil 45 in the direction of the pressure plate 20 where it can be best utilized. However, when an arrangement as illustrated in FIG. 4 is utilized, there exists the possibility that voltages which may be transmitted from the resistive heating layer 30 to the metal foil 45 may cause an electrical shock to the user. It is advantageous to add a heat resistant electrically isolating foil 47 to separate the resistive heating layer 30 and the metal foil 45. The electrically isolating layer 47 may be made from any suitable material which is commonly used for such purposes.

FIG. 6, which has already been discussed above, clearly shows the zig-zag sewing stitch 37 which is utilized to produce an electrically conductive connection between the metal foil strip 35 and the resistive heating layer 30. To provide minimum resistance at the point of connection between the metal foil strip 35 and the resistive heating layer 30, it is advantageous that these two be substantially coextensive with one another as shown in FIG. 6.

Although the present construction may be useful in different types of heating presses, it is particularly contemplated that the press plates as described above be utilized in an apparatus for ironing articles of apparel as disclosed in the applicant's U.S. Pat. No. 3,491,469. As disclosed in this patent, it is contemplated that either one or both press plates be constructed in the fashion described.

Although the above connecting means between the metal foil strips 35 and the resistive heating layer 30 has been described and shown as a zig-zag sewing stitch, it is obvious that any other connecting means which provides good electrical connection between these members can be equally utilized.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of press plates differing from the types described above.

While the invention has been illustrated and described as embodied in a heated press, particularly for pressing articles of coating, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from

the standpoint of prior art fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended

1. A heated press, particularly for pressing articles of clothing, comprising two press plates movable relative to each other between an open and a closed position and adapted to receive between them in said open position an article to be pressed in said closed position, at least one of said press plates including a rigid base plate, a pressure plate substantially co-extensive with said base plate and connected thereto, heating means comprising an electrically insulating mounting layer and a resistive heating layer arranged between said base plate and said pressure plate, and heat insulating means intermediate said heating means and said base plate for preventing loss of heat through the latter, said base plate and said pressure plate being arranged in such a manner that said pressure plate contacts the article to be pressed when said press plates are in said closed position, said resistive heating layer having two opposite edges and further comprising two electrical conductors each connected to another of said opposite edges in electrically conductive relationship, each electrical conductor comprising an elongated metal foil strip and being arranged to be connected to another terminal of a source of electrical energy to thereby cause current to flow through said resistive heating layer from one edge thereof to the other and causing the same to become heated.

2. A heated press as defined in claim 22, wherein the other of said press plates is constructed similarly to said one press plate.

3. A heated press as defined in claim 1, wherein said mounting layer is made from paper.

4. A heated press as defined in claim 1, wherein said electrical conductors are made from copper.

5. A heated press as defined in claim 1, wherein said electrical conductors are connected to said resistive heating layer by a zig-zag sewing stitch.

6. A heated press as defined in claim 1, wherein said resistive heating layer faces said heat insulating means.

7. A heated press as defined in claim 1, wherein said resistive heating layer faces said pressure plate.

8. A heated press as defined in claim 1, wherein said pressure plate has a side facing said heating means, further comprising heat resistant, electrically isolating means interposed between the former and the latter.

9. A heated press as defined in claim 8, wherein said electrically isolating means comprises a coat of material deposited on said side of said pressure plate.

10. A heated press as defined in claim 9, wherein said coat of material is a coat of paint.

11. A heated press as defined in claim 8, wherein said electrically isolating means comprises an intermediate layer interposed between said side of said pressure plate and said heating means.

12. A heated press as defined in claim 11, wherein said intermediate layer is made from polyethyleneterephthalate.

13. A heated press as defined in claim 1, further comprising a heat reflecting surface interposed between said heating means and said heat insulating means.

14. A heated press as defined in claim 13, wherein said reflecting surface comprises a metal foil.

15. A heated press as defined in claim 13, further comprising an electrically isolating foil interposed between said heat reflecting surface and said heating means.

16. A heated press as defined in claim 1, wherein said heat insulating means is made from a heat resistant polystyrene foam material.

17. A heated press as defined in claim 1, wherein said heat insulating means is made from an electrically isolating material.

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