

Dec. 10, 1968

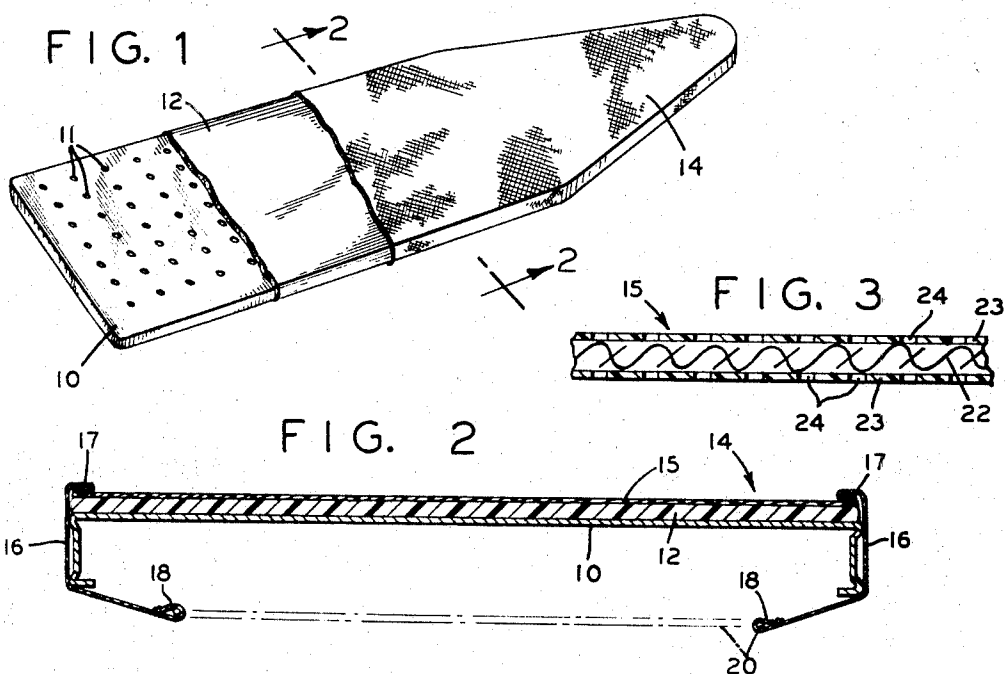
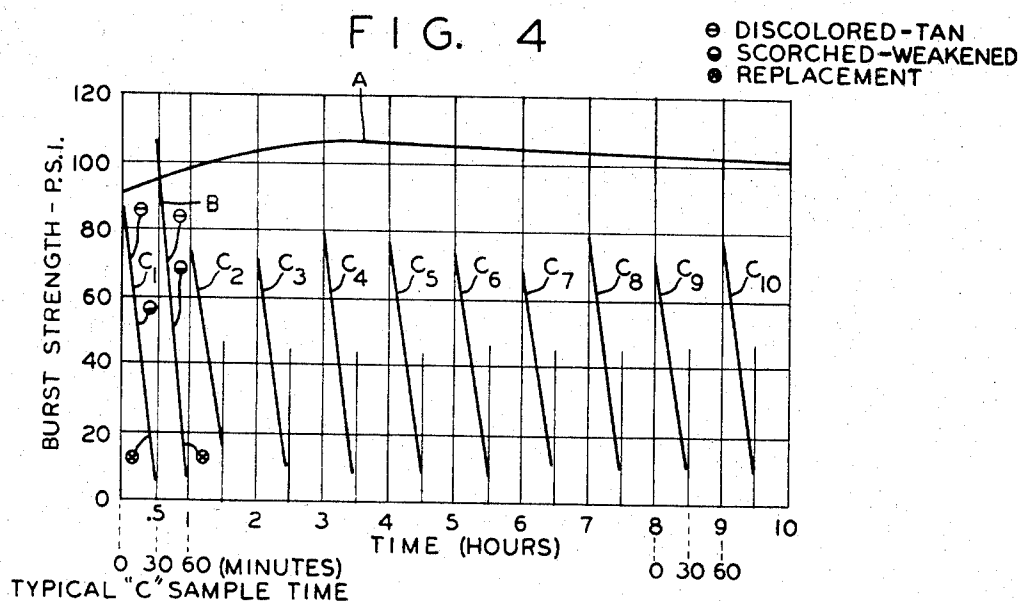
J. G. ADILETTA ET AL

3,414,995

IRONING BOARD COVER

Original Filed March 20, 1964

2 Sheets-Sheet 1



ALL BRAND "C" SAMPLES SHOWED
SIMILAR TIMES FOR DISCOLORATION AND
SCORCHING.

ALL "C" SAMPLES FAILED WITHIN
1/2 HOUR.

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2 Sheets-Sheet 2

FIG. 5

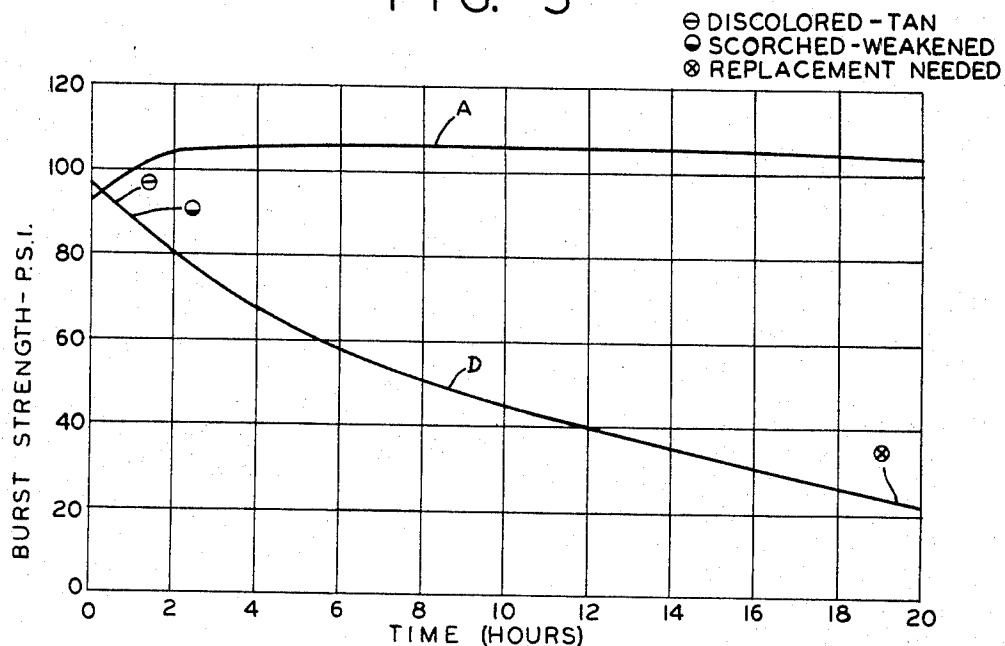
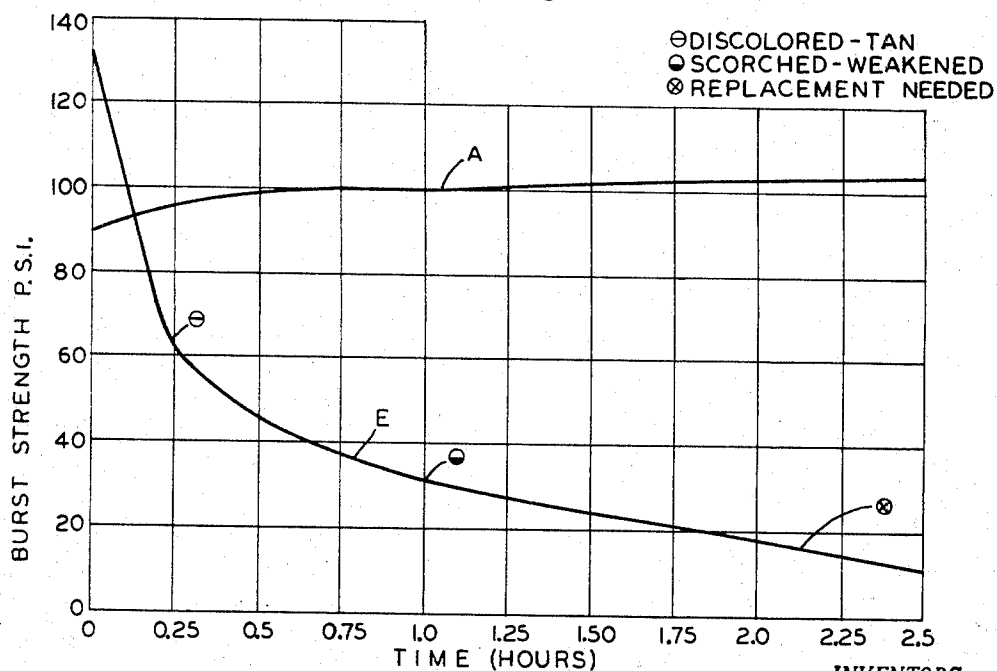


FIG. 6



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3,414,995

IRONING BOARD COVER

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Continuation of application Ser. No. 354,502, Mar. 20, 1964, which is a continuation-in-part of application Ser. No. 141,433, Sept. 28, 1961. This application July 14, 1966, Ser. No. 573,733

5 Claims. (Cl. 38—140)

ABSTRACT OF THE DISCLOSURE

An ironing board cover is provided comprising a central panel formed of porous silicone rubber-impregnated woven glass fabric permeable to moisture and shaped to cover the ironing surface of an ironing board; a holding member is attached to the outer periphery of the central panel and shaped to fit over and around the ironing board in order to bring the central panel into close fitting contact with the ironing board surface.

This application is a continuation of copending application Ser. No. 354,502 filed on Mar. 20, 1964, abandoned on Aug. 2, 1966 which is a continuation-in-part of application Ser. No. 141,433 filed on Sept. 28, 1961 and forfeited on Mar. 21, 1964.

The invention relates to ironing board covers comprising, in combination, a central covering panel of porous, silicon rubber-impregnated woven glass fabric, shaped to cover an ironing board and defining an ironing surface, and a holding member attached to an outer periphery thereof to bring the panel into close-fitting contoured contact with the board or with an ironing pad thereon; and more particularly, to a contoured ironing board cover having a central panel of porous silicone rubber-impregnated woven glass fabric in the same configuration as the ironing board upon which it is to be placed, a skirt attached about the outer periphery of the panel adapted to fit over the corresponding outer periphery of the ironing board, and made of the same or different fabric, and securing means for drawing the skirt snugly against such periphery of the board to bring the panel into close-fitting contact with the board or a pad thereof.

This invention is directed to ironing board covers on ironing boards, pressing machines and the like, employed for the purpose of smoothing fabrics. On apparatus used in removing the wrinkles from the fabrics and, in particular, in home ironing boards, there is employed a flat non-yielding metal or wood board or surface upon which is applied a yieldable pad or cushion such as foam material or knitted fabric and over the latter is placed a covering for the ironing surface and a fitted portion for securing the covering onto the board.

The invention will be described in conjunction with ironing board covers used on home ironing boards which are used in conjunction with a hand iron. It is apparent, however, that the ironing board cover of the invention can be shaped and cut to any desired configuration and the skirt can be shaped so that it can likewise be applied on any ironing board, such as on mangles and commercial fabric pressing apparatus.

The desirable characteristics of an ironing surface include a relatively smooth textured surface having exceptional freedom from lint, absence of sticking when contacted by a hot iron, but having sufficient drag to prevent any material lying on top thereof from sliding when ironed, a breathing or porous structure to dispel hot gases and moisture accumulated during ironing, and high resistance to burning and scorching when subjected to

ironing temperatures of upwards of 400° F. These are all built into the ironing board cover of this invention.

FIGURE 1 illustrates the ironing board cover of this invention on a conventional ironing board and pad.

FIGURE 2 is an enlarged view taken substantially along line 2—2 of FIGURE 1.

FIGURE 3 depicts an enlarged cross-sectional view of the ironing board cover of the invention.

FIGURE 4 is a graph showing the relative life of the ironing board cover of the invention in comparison with commercially available cotton-aluminum-silicone covers.

FIGURE 5 is another graph illustrating the comparative life of the ironing board cover of the invention to a commercially available asbestos cover.

FIGURE 6 is still another graph in which yet another commercial ironing board cover is compared.

Referring more particularly to the drawing, FIGURE 1 shows an ironing board 10 of standard sheet metal design and dimensions containing appropriate perforations 11. The board surface is provided with a suitable pad 12 of a conventional composition preferably of the type which resists matting. For example, pads which can be utilized and are available commercially include polyurethane foam, silicone rubber, blends of rubber and asbestos, non-woven cellulose, mixtures of cotton and polyester foam, or textile, woven or non-woven fabrics of suitable thickness and blends including natural as well as synthetic fibers, e.g. nylon, acrylics, polyesters, acetates, etc. A woven cotton pad having a thickness of from about 250 to about 500 mils and, preferably, having a thickness of at least about 300 mils has been found highly satisfactory as a padding for the cover cloth of the invention.

The structure of the cover of the invention is preferably tailored so that the cover 14 includes a flat central panel 15 and a depending skirt portion 16 suitably secured to the central panel as by stitching at 17. The skirt terminates at its free end in a hem 18 in which a drawstring of conventional arrangement 20 or a resilient or elastic band can be inserted to hold the cover on the board.

As is evident from the drawings, the ironing board cover of the invention comprises as the essential elements a central panel embodying the ironing surface, and made of silicone-rubber impregnated and coated glass fabric, and a member attached to the outer periphery thereof to hold it in place on the ironing board surface or pad.

The panel will of course be shaped to fit the ironing board. It can accordingly be designed for any kind of board, such as home ironing boards, mangles and commercial fabric pressing apparatus.

The holding member is designed to hug the ironing board in a manner to retain the panel in position thereon. For this purpose, it is designed to engage the edge of the ironing board, if there is one, or else it can be attached thereto by lugs, or loops, according to the board's design.

The securing means which can be used for attaching the skirt around the ironing board includes a draw-string which can be pulled through a hem, formed on the outer periphery of the skirt and tied to hold the skirt firmly around the ironing board. In place of the draw-string, there can be supplied an elastic band through the hem. Alternatively hook and spring metal fasteners can be attached to the skirt for securing the cover to the board. Where desired, the skirt can itself be formed of elastic material so that additional holding means are unnecessary. The skirt itself will cling tightly to an ironing board around which it is placed. Similarly, the skirt need not completely surround the ironing surface panel but can

form a flap at either end to fit only over the ends of an ironing board, such as the board of FIGURE 1 above. Alternatively, the skirt can be merely flaps, or even relatively narrow straps attached to either side of the central panel which can fit around the ironing board and be connected together beneath the board. The design of the holding member is not critical and any means which can hold the central panel ironing surface firmly against the ironing board is suitable.

The porous ironing panel 15 of the ironing board cover of this invention shown in FIGURE 1 can be formed of a wide variety of woven glass fabrics. To obtain the smoothest possible surface, and to prevent the imprint of the weave of the glass fabric on the cloth being pressed, the glass fabric used to form the ironing surface should have a warp and weft (or filling) count of from about 36 x 18 to about 56 x 42, and preferably, from about 36 x 28 to about 48 x 36. However, in the circumstances where the texture imprint or effect is not disadvantageous, glass fabric with a broader weave can be utilized.

The silicone-rubber with which the ironing panel of the present invention is impregnated has elastomeric properties and should be distinguished from the solid but non-elastomeric silicone resins. Silicone rubber gum having these elastomeric properties is available in a paste or in a dispersion containing from 20 to 50% of the silicone polymer. The paste usually is a soft, uncured, or partially cured, silicone gum with or without a dispersing liquid. The silicone rubbers which can be used for impregnating the ironing panel of this invention include silicone rubber, copolymers of silicone rubber with fluorocarbons such as tetrafluoroethylene and chlorotrifluoroethylene and mixtures of silicone rubber with a minor proportion of fluorocarbon resins such as polytetrafluoroethylene or the copolymer of chlorotrifluoroethylene with vinylidene fluoride. The impregnating resins should be capable of withstanding temperatures when cured of at least 400° F. and preferably, up to 450° F.

The silicone rubber is applied to the woven glass fabric in the usual manner by either dipping the glass fabric into a low viscosity paste or dispersion of the silicone rubber, or by spreading a paste or dispersion of the silicone rubber over the surface of the glass fabric by a doctor-knife, or a roller. Commercial preparations of the silicone rubber useful for this invention include the Silastics, such as Silastic 132 dispersion. Generally, to form a more porous coating, the fabric is preferably prepared by dipping in a dispersion of the silicone rubber in an organic solvent.

After applying the silicone rubber paste or dispersion, the glass fabric must be first dried to remove any solvent present in the silicone composition. The curing temperature varies for different silicone rubbers.

The proportion of silicone rubber in the glass fabric of the ironing panel can be from 5 to about 45 percent. The amount of silicone rubber impregnated should be sufficient to prevent weave-separation, resulting in loose or exposed fibers. This amount will be dependent upon the nature of the weave, but should not be of such a proportion as to close the pores of the fabric, allowing it to remain moisture-permeable. Preferably, the proportion of rubber is at least 10 percent and the optimum proportion is from 20 to about 30 percent.

The color of the ironing panel material can be white or, if desired, the finished color can be tan by addition of a coloring agent to the resin coating composition.

In forming the ironing panel, generally a suitably dimensioned piece of glass fabric is provided, of a size at least sufficient to form one central panel to cover the ironing surface of the ironing board, and generally, of a size sufficient to form several such central panels. The fabric, after it has been impregnated and coated with silicone rubber, is formed by cutting with a knife or other means to a shape required for the ironing panel of the

particular ironing board cover intended, and the holding member or skirt is then attached thereto.

In certain circumstances, where the holding member is formed integral with the ironing panel, the ironing panel is impregnated with the silicone rubber composition and the remaining portion, which will serve as the skirt or holding member, is not so impregnated. This allows the holding member to have sufficient flexibility to follow the contours of the ironing board, so that it can be wrapped around the ironing board without forming any sharp creases in the fabric.

Where the skirt is formed as a separate unit, the fabric, which can be the same or different from the glass fabric of the ironing panel, is cut and sewn into the desired envelope-like skirt. The inner periphery of the skirt portion is then attached as by sewing or glueing to the outer periphery of the central panel. The outer periphery of the skirt is usually provided with suitable means for securing the cover onto the ironing board so as to hold the central panel firmly thereagainst during ironing. The skirt, as stated above, can be formed of a material of the same glass fabric as the central panel, but preferably not impregnated with a silicone rubber. However, preferably, a more flexible material is used. Usually a closely woven cotton, linen, wool, acrylic, acetate, polyester, or nylon fabric is suitable. Such fabrics are more flexible than glass fabric which permits them to be more closely fitted to follow the contour and curvature of the board around which they are held.

The ironing panel of this invention can be prepared, for example, as follows: A woven glass cloth having, for example, a thickness of 7 mils, a thread count of 42 x 32, weighing 6 ounces per square yard and having a tensile strength of 250 by 200 lbs. per linear inch, dipped into a 35% dispersion of silicone rubber gum in xylene. This dispersion is sold commercially as Silastic 132. The glass cloth is left in the dispersion for a period of about 3 to 7 minutes to obtain a resin pick-up on the fabric (dried weight) of about 23% based on the weight of the woven glass fabric. The impregnated glass cloth is then dried so that the proportion of solvent remaining is less than 2%. The solvent is evaporated from the resin coating at as low a temperature as possible, to prevent bubbling of the silicone rubber impregnation and coating. Usually, a temperature of around 150 up to 300° F. for a period of 3 to 5 minutes, is sufficient. The rubber is then cured at a temperature of from about 250 to 300° F. for 5 minutes and then at 500° F. for 2 minutes. The thus-impregnated coated fabric has pore openings of about 32 to 175 microns and has a smooth finish.

The impregnated fabric is then cut to form a panel conforming to the surface dimension of the ironing board of FIGURE 1, and a skirt as the holding member, is attached to the panel by stitching around the outer periphery of the panel as shown in FIGURE 2. The outer periphery of the skirt is hemmed and a draw-string passed through the hem. The finished cover, comprising the skirt and panel, are then placed over and around the ironing board of FIGURE 1, and the draw-string pulled tight, and tied so that the skirt is pulled around to follow the contours of the board, and the central panel ironing surface is held firmly against the top surface of the ironing board.

The ironing board cover of this invention made as described above was subjected to a test wherein a hot iron at full heat was placed upon the ironing panel for more than 20 hours. No visible scorching or discoloration of the fabric occurred. The temperature of the hot iron at full heat is approximately 425° F. The test results for the cover of the invention is depicted by line A in FIGURE 4. To compare the cover of the present invention with covers available commercially, the same test was made on the commercial covers and the results are shown by lines labeled B, and C1 through C10. All of these covers

were cotton-aluminum-silicone covers which are sold widely on the market.

The time, in hours, along the horizontal axis of the graph of FIGURE 4, refers to the length of time in which Sample A was tested and did not fail. Each of Samples B and C1 through C10 were all tested and found to fail within a period of one half hour. For purposes of comparison, the results of these tests are shown on the same graph as the results of the tests on Sample A. As shown, each test of Samples B and C1 through C10 lasted for approximately 30 minutes. The lower group of numbers, "0, 30, 60 (minutes)" shown in two places along the horizontal axis, refer to the B and C1 through C10 tests.

In determining the life of an ironing board cover, it has been ascertained that the replacement of an ironing board cover is necessary where the tensile strength is so low that the fabric has little strength, i.e. the strength is below about 40 p.s.i. and when the discoloration becomes distasteful. Scorching or burning generally deteriorates the strength of the fabric so that it is readily torn and must be replaced. This characteristic of wear through scorching is measured as burst strength. The standard test procedure TAPPI No. T403M-53 dated Sept. 1, 1956, describes the use of a Mullen burst test for fabrics and similar materials herein employed. The instrument includes a clamping method of holding the material sample over an orifice through which pressurized air is directed to the backside of the test specimen which is sealed by contact with a rubber diaphragm, which yields as the specimen, is extended under pressure until the sample ruptures and the pressure drops. The instrument thereby indicates that the burst strength of the specimen in pounds per square inch.

Since the life of the cover material is limited to a usable strength and/or scorch levels, an accelerated cycle is simulated by placing a typical iron on the test sample at a full heat.

The results of periodic burst testing of the samples of the cover of the invention, in comparison to another commercially available Brand D, are shown in FIGURE 5 in which the superior life for the cover of this invention is illustrated. The curve D shows a high quality commercial asbestos cover which, by test, is substantially superior to the cotton-aluminum-silicone types of FIGURE 4. The asbestos cover D scorched in about an hour. Brand D, however, retained usable strength for 10 hours by test. In comparison, as seen in FIGURE 4, curves B and C1 to C10, the heavy-weight cotton-silicone-aluminum material with an initial strength of over 110 p.s.i. scorched in 15 minutes and failed completely in about 30 minutes. The cover cloth of the invention, on the other hand, increased slightly in strength from the heating and continued at the over-all 100 p.s.i. level throughout the test. It showed no downward trend whatsoever over the 10 hour period and even after 20 hours the decrease in strength is not significant. Also, each of the cotton-aluminum-silicone covers dispelled burning and chemical odors under the test but no odor was apparent from the cover of the invention.

The glass fabric used for forming the ironing surface of the cover of this invention can have a wide variety of characteristics. The following are examples of fabric which can be used:

	A	B
Thickness, mils.....	5	16
Average oz. per sq. yd.....	3.75	13.3
Thread count per in. (warp and fill).....	36 x 34	58 x 32
Tensile strength.....	150 x 140	600 x 400

The silicone rubber can be applied with a single dipping into the paste or dispersion, or by multiple dipping. Usually, the fabric is dried after each dipping, but all of the coats are usually cured at the same time.

Similarly, fabrics woven of a mixture of glass fibers and asbestos fibers can be coated with the silicone resin in the same fashion.

One embodiment of ironing board cover in accordance with the invention has a central panel impregnated with Silastic 132 silicone rubber, and a skirt bonded thereto, of the same glass cloth. The panel and skirt are fashioned of a woven glass cloth of a dimension greater than necessary to cover the ironing surface of the board of FIGURE 1, is prepared. The cloth is 7 mils thick, has a thread count of 42 x 32, weighing 6 ounces per square yard and has a tensile strength of 250 x 200 lbs. per linear inch. The fabric is dipped in a 35% solids dispersion of the Silastic 132 silicone rubber, prepared with xylene as the dispersion medium. The glass fabric is immersed therein and passed through this rubber dispersion. The rubber dispersion impregnated glass cloth is dried to a moisture content of less than 2%. The solvent is evaporated from the resin coating and the fabric is dried at a temperature of 150-300° F. for a period of 3-5 minutes, then cured at 250-300° F. for 5 minutes and at 500° F. for 2 minutes. A smooth but substantially pervious fabric is produced. The resin pickup on the woven fabric (dried weight), after a retention time of 3-7 minutes, is about 23 based on the weight of the woven glass fabric. The coated fabric has pore openings of about 32 to 175 microns.

The silicone rubber-coated glass fabric is then cut to conform to the surface dimensions of the ironing board of FIGURE 2. A skirt of cotton twill is stitched around the periphery of the coated ironing surface piece in the manner shown in FIGURE 2, so as to provide a means for securing the cover to the ironing board without the necessity of bending the resin-coated woven glass fabric around the edges of the ironing board. The outer edge of the skirt is then hemmed and a draw-string passed through the hem. The ironing surface was then placed over the pad and ironing board of FIGURE 1, the skirt portion folded around and under the ironing board and the draw-string fastened. An elegant ironing surface is thereby presented.

Another embodiment is made from a glass fabric having the following characteristics:

	A
Thickness, mils.....	5
Average oz. per sq. yd.....	3.75
Thread count per in. (warp and fill).....	36 x 34
Tensile strength, p.s.i.	150 x 140

A third embodiment of cover with a sewed-on skirt is made from a woven glass fabric (132) characterized as follows:

	B
Thickness, mils.....	16
Average oz. per sq. yd.....	13.3
Thread count per in. (warp and fill).....	58 x 32
Tensile strength.....	600 x 400

A fourth embodiment is made from a fabric comprising glass fiber and asbestos fiber blend (thread count 48 x 34; tensile strength 400 x 80), coated with silicone rubber and thereafter dried and cured. The coated cloth is then cut to conform to the top surface of the ironing board of FIGURE 1, and a skirt formed of an acrylic fabric was sewn thereto, three sets of hook and spring metal fasteners are attached to the skirt and the cover placed over the ironing board of FIGURE 2.

Each of these covers provides smooth, drag-free ironing surface which remains free from discoloration and scorching and emits no odor even after ten hours of contact with a hot iron at full heat. No ironing board cover having comparable characteristics is known.

It will be apparent to those skilled in the art that various modifications may be made in the teaching presented without departing from the scope of the invention. Accordingly, the invention is not to be limited except insofar as necessitated by the appended claims.

Having regard to the foregoing disclosure, the follow-

ing is claimed as the inventive and patentable embodiments thereof:

1. An ironing board cover comprising, in combination, a central covering panel of porous, silicone rubber-impregnated, woven glass fabric containing from about 5 to 45 percent by weight of silicone rubber, shaped to cover an ironing board and defining an ironing surface and a holding member attached to the outer periphery of the central panel shaped to fit over and around an ironing board, thereby bringing the panel into close-fitting contoured contact with the ironing board.

2. The ironing board cover of claim 1, wherein the holding member comprises a skirt attached to the outer periphery of the central panel, shaped to fit around the sides of an ironing board, and securing means attached to the skirt for holding the skirt and the central panel snugly against the ironing board.

3. The ironing board cover of claim 2, wherein the securing means comprises a hem formed on the outer periphery of the skirt and a draw-string drawn through the hem for tying the skirt tightly around the ironing board.

4. The ironing board cover of claim 2, wherein the holding means comprises a hem formed on the outer periphery of the skirt and an elastic band within the hem having sufficient resilience to enable the skirt to be

drawn over and around the ironing board and to hold the skirt and central panel firmly against the board after being placed around it.

5. The ironing board cover of claim 1, wherein the proportion of silicone rubber in the glass fabric forming the central panel is from about 10 to 45 percent.

References Cited

UNITED STATES PATENTS

10	1,885,737	11/1932	Lewis	38—140
	2,264,158	11/1941	Clark	38—140 X
	2,703,775	3/1955	Panagrossi et al.	
	2,710,266	6/1953	Hochberg	117—126 X
	2,891,033	6/1959	Savage	117—161
15	3,064,374	11/1962	Dwinnell et al.	38—140
	3,081,202	3/1963	Kemp	117—126
	3,105,313	10/1963	Johnson	38—66
	3,262,810	7/1966	Campbell	117—126

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U.S. Cl. X.R.

25 117—98, 126

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,414,995 Dated December 10, 1968

Inventor(s) Joseph G. Adiletta et al

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 31, "silicon" should be --silicone--. Column 3, line 19, between "not" and "dis-", insert --a--; line 64, between "from" and "20" insert --about--. Column 5, line 32, between "indicates" and "th" delete "that"; line 37, between "at" and "full" delete "a". Column 6, line 57, between "with" and "silicone" insert --the--.

SIGNED AND
SEALED
MAR 10 1970

(SEAL)

Attest:

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