Jan. 21, 1958 W. C. HITCHCOCK ET AL 2,820,721

COVER CLOTH

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Fig. 1

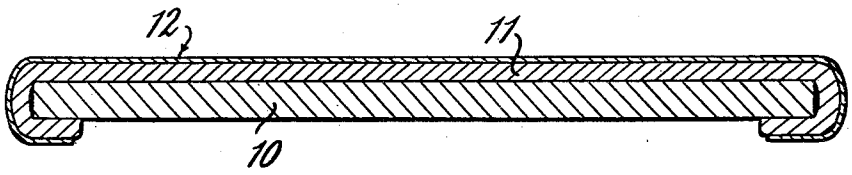
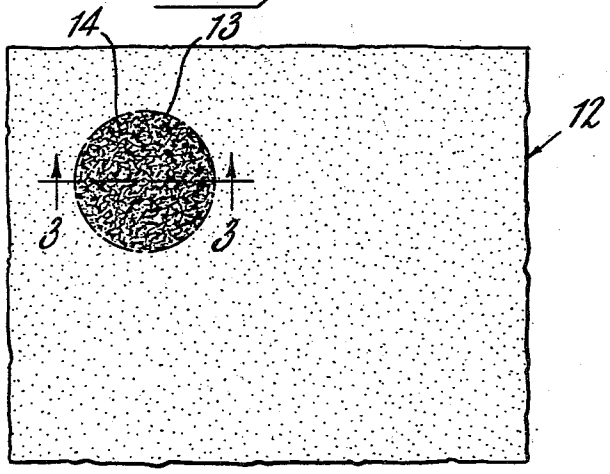


Fig. 2



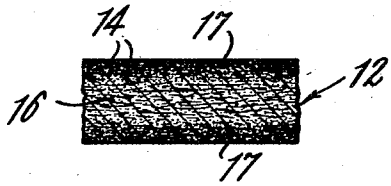


Fig. 3

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COVER CLOTH

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3 Claims. (Cl. 117—72)

This invention relates to novel cover cloths for use on ironing boards, pressing machines, and the like, and more particularly to a non-woven heat resistant cover cloth formed predominately of asbestos fibers.

Pressing machines are used for pressing dry cleaning such as suits, dresses, etc. and wash goods such as shirts, dresses, etc., and other articles of wear. Ironing boards are used in the home to press or iron various articles of laundry and clothing. The cover cloth contemplated by the present invention was developed primarily for use upon pressing machines, ironing boards, and the like.

Pressing machines are provided with a work supporting fixed member called a "buck" and a movable pressing member called a "head." The buck in pressing machines comprises a table-like member having a convexed yielding upper face which is usually covered with some form of textile or other padding, and over this padding is secured a cover cloth. The head has a concaved work engaging surface formed of metal, and this surface may or may not be covered with a cover cloth.

Ironing boards consist of an elongated board or similar member that is supported by suitable means such as legs. The elongated board-like member forms a work supporting surface, and this surface is usually covered with some form of textile or other padding, and over this padding is secured a cover cloth.

Pressing machines of the type used for dry cleaning are operated at a temperature of about 240°–275° F., and of the type used to press laundry are operated at a temperature of about 300°–340° F. The irons used on home ironing boards are operated at widely varying elevated temperatures. These temperatures cause a cover cloth made of cotton to deteriorate rapidly, so that it soon becomes unsatisfactory for use and must be replaced.

It has therefore been proposed heretofore to use asbestos cover cloths formed of interwoven asbestos yarns, and such a cloth has proven very satisfactory; Foster U. S. Patent No. 2,180,515, relates to such a cloth. The service life of such a cover cloth is several times that of cotton cover cloths, and the quality of the work produced on such cover cloths meets dry cleaning standards.

However such cover cloths are relatively costly. The present invention contemplates a cover cloth formed predominately of asbestos fibers which is much less costly than the woven asbestos fabrics heretofore used, yet one which has all the heat resisting properties of these asbestos cloths over cover cloths of cotton and similar fibers. A further advantage of the instant invention over the cover cloths heretofore used, and particularly over the woven asbestos cover cloths heretofore used, is that it has a much smoother surface, and therefore the ironing cover is better suited for use in ironing such items as bed

linen, shirts, handkerchiefs and the like, because it is less likely to leave a coarse impression of the cover on the work when the latter is ironed.

To manufacture the ironing and pressing cover of this invention, a mass of asbestos fibers is assembled as a felted sheet. This sheet is impregnated with a binder which serves to hold the fibers together and hence to give the sheet strength. The sheet containing the fibers also carries a surface coating that is adapted to provide an enhanced ironing or pressing surface for the cover.

The felted sheet which is to form the non-woven fabric of this invention, preferably is made of a major proportion of asbestos fibers and a minor proportion of a carrier fiber, such as cotton, rayon, glass etc., whose inclusion in minor percentages is helpful in forming a sheet of uniform thickness. This sheet may be made by any of several methods which, essentially, dispose the fibers more or less randomly in a sheet of uniform thickness. For example several layers of card web may be superposed to obtain a fabric of the desired weight and thickness. Or the web produced by a garnetting machine may be used. Several types of machines have been designed specifically to produce webs with substantially no orientation of the fibers in the web, and these machines are described in the literature and are available on the market. (For example, see "The Random Web Process," Curlator Corporation, Textile Division, East Rochester, New York, Bulletin No. 102.) A felted sheet of fibers in which there is substantially no orientation of the individual fibers is preferred for the sheet of this invention, because a cover cloth can be made from such a sheet that will have substantially the same strength in all directions of the cover cloth.

To make the cover cloth of this invention there is produced a sheet of this type, and having sufficient weight of fibers that a finished cover cloth having a weight of from 12 to 18 ounces per square yard and a thickness of from .020" to .040" can be made therefrom. This sheet is impregnated with a binder which serves to bond the fibers in the sheet together to form a permanent structure. Preferably the sheet contains a relatively small quantity of binder in its interior, so that the finished cover cloth may be as flexible as possible. A higher ratio of binder weight to fiber weight may be provided at the surface of the fabric to prevent the fibers from shedding or adhering to the object being ironed.

One specific cover cloth is obtained by impregnating a fiber sheet of the requisite weight with a flexible, water insoluble synthetic resinous binder, and thereafter by applying to the sheet a different surface coating which is adapted to lay the surface fibers to prevent linting and to form a wear resistant ironing and pressing surface thereon. The impregnated and surface coated sheet may be calendered to render the surface of the ironing cover smooth so that it is adapted for use in the highest quality ironing and pressing operation.

For a better understanding of the nature of this invention, reference should be had to the following detailed description of specific embodiments thereof.

In the accompanying drawing forming a part of this specification:

Fig. 1 is a cross-sectional view through an ironing surface such as an ironing board or the buck of a conventional pressing machine;

Fig. 2 is a schematic plan view of a piece of cover cloth in accordance with this invention partially enlarged to illustrate the fabric of this invention; and

Fig. 3 is a schematic cross-sectional view through the enlarged portion of the cloth of Fig. 2 along the line 3—3 and further indicating the nature of the fabric in accordance with this invention.

Referring now to the drawing, support **10** is the conventional ironing board or the buck of a conventional pressing machine. As is customary, there is applied over the support **10** a padding **11** of textile fabric or the like. Applied over this padding **11** and forming the customary ironing or pressing surface is the cover cloth **12** in accordance with this invention.

The cover cloth **12** in accordance with this invention is illustrated somewhat fancifully in Fig. 2 of the drawing wherein a portion of the cover cloth **12** is greatly enlarged at **13**. As illustrated in this enlarged area, the cover cloth in accordance with this invention is produced of a sheet of fibers **14** which are randomly disposed in the fabric. A binder, as indicated by the shading, binds the several individual fibers to each other so that the whole coheres together in a permanent structure. Referring to Fig. 3 it will be seen that the cover cloth **12** comprises the sheet of fibers **14** which are impregnated with a binder as indicated by the light shading at **16** and which carries a surface coating on one or both surfaces as indicated by the heavy shading at **17**.

The fibers **14** in the cover cloth **12** of this invention are predominantly asbestos fibers. Usually a minor proportion of a carrier fiber such as cotton, rayon, glass, etc. is included in the cover cloth **12**, because the inclusion of a carrier fiber in minor percentages renders the production of a uniform sheet of randomly disposed asbestos fibers less difficult. Preferably the cover cloth **12** includes a minor proportion of a cellulosic carrier fiber such as cotton or rayon.

For a satisfactory cover cloth, the binder of this invention should be flexible, water insoluble, and stable at the elevated temperatures of use. Various synthetic resins are satisfactory for this binder, and thermoplastic resins are especially suitable. Acrylic resins, for example polymerized methylmethacrylate, form excellent binders. Other thermoplastic materials such as polystyrene, polyvinyl butyral, isobutylene-acrylonitrile copolymer, etc. would be satisfactory. Thermosetting resins, because of their greater heat stability, have obvious added advantages as a binder for the cover cloth of this invention, but many thermosetting resins lack the requisite flexibility for use as the binder of this invention. However, thermosetting resins are known which possess the requisite flexibility for the binder in the cover cloth of this invention, and these resins may be used. For example, resorcinol formaldehyde resin dissolved in an aqueous emulsion of neoprene synthetic rubber may be used. Other suitable flexible, water insoluble, synthetic resinous binders will occur to those skilled in the art.

As pointed out above, the cover cloth **12** contains a minimum of this binder so as to retain maximum flexibility in the finished cover cloth. The cover cloth may carry a greater amount of binder on one or both surfaces to form a wear resistant ironing surface on the cover cloth. However, it is found that this wear resistant ironing and pressing surface can be provided by giving the cover cloth a surface coating in place of the excess binder in the surface and this is preferred. Various heat and wear resistant surface coating materials are available and can be used. For example an insolubilized polyvinyl acetal resin, such as polyvinyl butyral which is insolubilized by reaction with a melamine formaldehyde or a urea formaldehyde, may be used.

From the foregoing it is believed suitable methods of manufacture of the product of this invention will readily occur to those skilled in this art. In one specific method which has been employed, the web of fibers as received from a suitable machine is enclosed between a pair of screens which serve to support the fibers during production of the finished cover cloth. The web of fibers supported in this manner is advanced through a bath containing the binder in an aqueous emulsion, thence through a bath containing the surface forming material and thence to drying and/or curing apparatus to dry and/or cure the binder and surface coating material. If it is desired to enhance the smoothness of the surface of the cover cloth in accordance with this invention, the cover cloth may be calendered after the binder and surface coating have been applied, and either before or after any curing, such as the curing of the surface coating resin, occurs. The product is then ready to be cut to the necessary pattern for an ironing or pressing cover. If the finished cover cloth is not sufficiently porous for any specified use, such as the cover cloth for a dry cleaning press, its porosity may be suitably increased by perforating the finished cover cloth in an obvious manner.

The following specific example further illustrates the cover cloth of this invention. A sheet of randomly disposed fibers is prepared from a fiber mixture of 80% asbestos and 20% rayon, such that the fibers weigh 14 ounces per square yard. This sheet is impregnated with approximately 5%, based on the weight of the fiber mixture, of an aqueous emulsion of polymethyl methacrylate, 25% total solids. This binder is applied by advancing the web of fibers supported on a wire screen through a bath of the emulsion, and thence through a pair of squeeze rolls to remove the excess emulsion. Thereafter a surface coating of about 3% based on the weight of the fiber mixture of the following formulation is applied:

	Percent
Plasticized polyvinyl butyral emulsion (50% total solids)	5.00
Melamine formaldehyde resin (80% total solids solution)	0.25
Diammonium phosphate	0.05
High melting wax (33% emulsion)	2.50
Aqua ammonia (28% NH_3)	1.25
Water	90.95
	100.00

This surface coating is applied by advancing the fibrous sheet containing the binder through a bath of this formulation, and thence through a pair of squeeze rolls to remove the excess. Thereafter the cover cloth is dried, calendered, and cured.

Having thus described our invention, what we claim and desire to protect by Letters Patent is:

1. An ironing and pressing cover cloth adapted to be used over a padded work support, comprising a felted mass of predominantly asbestos fibers forming a thin, flexible smooth surfaced non-woven fabric between .020" and .040" thick, said felted mass including a minor proportion of a carrier fiber, said fabric weighing between 12 and 18 ounces per square yard, a flexible, water insoluble synthetic resinous binder bonding the fibers in said felted mass together to form a permanent structure, and a heat and wear resistant surface coating on the said fabric laying the surface fibers to prevent linting and to form a wear resistant ironing and pressing surface.

2. An ironing and pressing cover cloth adapted to be used over a padded work support, comprising a felted mass formed predominantly of asbestos fibers between .020" and .040" thick forming a thin, flexible, smooth surfaced non-woven fabric, said fabric weighing between 12 and 18 ounces per square yard, a flexible, water insoluble synthetic resinous binder bonding the fibers in said fabric together to form a permanent structure, and a flexible, heat and wear resistant surface coating of insolubilized polyvinyl acetal resin on the said fabric laying the surface fibers to prevent linting and to form a wear resistant ironing and pressing surface thereon.

3. An ironing and pressing cover cloth adapted to be used over a padded work support, comprising a felted mass of approximately 80% asbestos fibers and 20% cellulosic fibers between .020" and .040" thick forming a thin, flexible smooth surfaced non-woven fabric, said

fabric weighing between 12 and 18 ounces per square yard, a flexible, water insoluble, synthetic thermoplastic resinous binder bonding the fibers in said fabric together to form a permanent structure, and a heat and wear resistant flexible surface coating of polyvinyl acetal resin insolubilized by reaction with a resin selected from the group consisting of melamine formaldehyde resins and urea formaldehyde resin on the said fabric laying the surface fibers to prevent linting and to form a wear resistant ironing and pressing surface thereon.

References Cited in the file of this patent

UNITED STATES PATENTS

2,191,092	Cannon	Feb. 20, 1940
2,485,458	Quinn	Oct. 18, 1949
2,534,818	Holroyd	Dec. 19, 1950
2,704,730	Glatt	Mar. 22, 1955