Feb. 20, 1940. P. D. CANNON 2,191,092

IRONING PAD AND ASSEMBLY

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Fig. 1.

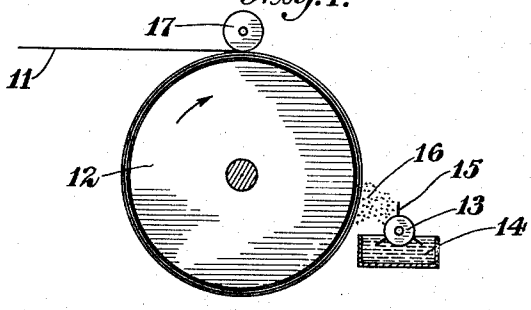


Fig. 2.

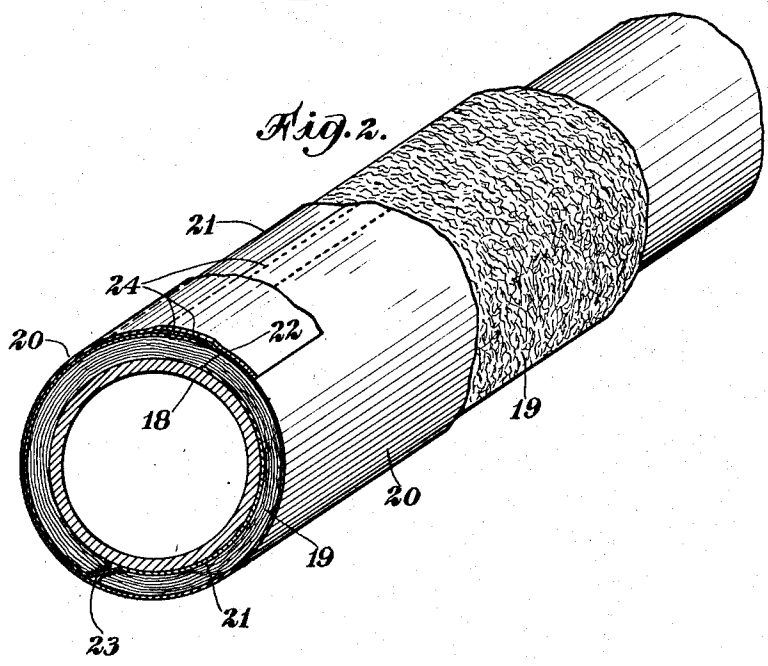
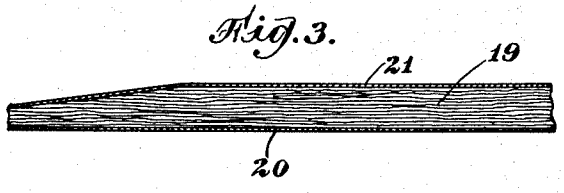


Fig. 3.



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IRONING PAD AND ASSEMBLY

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2 Claims. (Cl. 38—65)

This invention relates to an asbestos bat and, particularly, to an ironing pad.

The invention is particularly useful in connection with laundry ironing machines, as, for instance, those used for ironing flat work. The invention will be illustrated, therefore, by description in connection with such ironing machines.

These machines include usually highly polished concave beds or cradles. These are steam heated and are called steam chests. Resting upon the several beds are padded hollow rollers that are positively driven. The sheets, napkins, towels, or other goods to be ironed are passed between the beds and overlying rollers and are thus ironed.

During the ironing operation, the goods are incompletely dried, the further drying necessary being effected usually by the repeated passage of the goods adjacent to the heated equipment.

In these commonly used or similar ironing machines, the rollers have cushions or pads disposed thereover, that is, therearound. These cushions are constituted, ordinarily, of cotton or other organic fibre, usually in the form of bats or felts provided with a retaining facing and backing element of cotton cloth or the like.

These cushions frequently require replacement as often as every month, because of the effect of the prevailing high temperature which causes scorching or carbonization of the organic fibres. Also, the cushions, especially those of hair, may cause staining of the goods being ironed.

These long known difficulties from the use of cotton, hair, or similar fibrous material have led to many attempts to use asbestos fabrics, to avoid the deterioration due to heat and reduce the very heavy expense of laundries for replacement of ironing cushions and cover cloths and for machine adjustment.

However, repeated failures have been experienced heretofore in the attempted use of asbestos products. Thus, ordinary asbestos cloths were too rough in texture to give the proper smoothing effect upon the goods being ironed. Asbestos felts, enclosed usually between woven fabrics, likewise have failed. These felts were inclined to thicken or form bunches at certain positions, giving thick and thin spots of obviously undesirable effect in the use of the cushion in ironing. If certain binders were used to overcome this bunching up of the felt, the binder was found to harden under the influence of the moisture and elevated temperature to which the felt is constantly exposed during use. For example, binders of the type of sodium silicate or the like soften on the absorption of steam and subsequently harden or stiffen, forming hard spots or pillars in the felt. Or, if the binder were some solid hardenable material of usual type, there would be continuous hardening at the elevated temperature of the cushion, with consequent production of a hard, unyielding or brittle product.

The present invention comprises the novel features hereinafter described in connection with the method of manufacturing a suitable bat, the resulting bat, and a composite pad including the bat and retaining members, such as facing and backing elements, assembled on the ironing roller.

A preferred embodiment of the invention is illustrated in the attached drawing and will be described in connection therewith.

Fig. 1 is a diagrammatic end view of equipment used in making the improved felt of the present invention.

Fig. 2 is a sectional perspective view, partly diagrammatic and broken away for clearness of illustration, of a laundry ironing pressure member or roller, having around it a cushion constructed in accordance with the present invention.

Fig. 3 is a sectional view of the cushion shown in Fig. 2.

In making the improved bat there is first formed a thin layer of fibres individually oriented predominantly in planes extending generally parallel to a face of the said layer and held coherently therein, as by being felted with adjacent fibres in the same layer. A multiplicity of such layers are then formed, one upon another, and are compressed moderately, that is, to such an extent as to cohere together the individual layers without excessive crushing and without increasing the density of the composite to an undesired extent.

The multiplicity of individually thin layers and the building of the composite, layer upon layer, may be produced in a shaker felting operation, in which the selected fibres are allowed to settle from a suspension or dispersion in air upon a shaken felting member.

However, the general method outlined above is preferably followed in the modification utilizing the equipment shown diagrammatically in Fig. 1.

Thus, there is first formed a thin web 11 that is coherent. This web may be a conventional web from the doffer roll of a carding machine in which the selected mixture of fibres is dispersed and suspended in air and then felted into the thin web. Since the carding machine is not a part of the present invention, it is not illustrated.

The fibres selected consist predominantly of asbestos fibres, such as Canadian asbestos (chrys-

otile) fibres, of moderate length, suitably with a small proportion of skeletonizing and strengthening fibres such as cotton, rayon noil or silk noil. For instance, I have used satisfactorily the following fibre composition: 30 parts by weight of chrysotile asbestos fibres, largely of length of individual fibres between 3/8 and 3/4 inch and averaging about 1/2 inch or less; 55 parts by weight of Canadian asbestos fibres showing, in the usual asbestos screening test, approximately 15% by weight on a 2-mesh screen, 48% on a 4-mesh screen, and 25% on an 8-mesh screen; and 15 parts by weight of cotton, of fibre length preferably somewhat greater than that of American staple, say, of average length of fibres of about 1 1/16 inches.

The proportion of organic skeletonizing fibre should not be so large as to cause collapse or excessive weakening of the felt during use at the elevated temperature of ironing. On the other hand, the proportion of the skeletonizing fibres should be adequate to permit manipulation of the thin web, as described later, without tearing and to increase the resiliency of the finished felt.

The web **11**, made as described, is composited in a multiplicity of plies, as, for example, by being wound spirally upon itself on the rotated mandrel **12**.

During the compositing operation, a small proportion of water is applied to the individual plies or webs, as by means of the brush roller **13**. This roller is rotated, while partly submerged in the bath **14** of water, so that the bristles **15** attached to the periphery of the roller throw a small amount of water against the felt, as at position **16**. I have used to advantage an application of water, in this manner equal to approximately one-fourth of the weight of the fibrous material of the felt. The proportion of water used should be adequate to dampen slightly (moisten) the plies and facilitate their being consolidated together under the effect of the moderate compression by the overriding tubular roller **17**. On the other hand, the amount of water used should not be so large as to make the felt soggy.

A bat so made contains no added water-soluble or heat-hardenable binder and does not become hard upon being exposed to both moisture and heat in the ironing operation. Furthermore, when used on the ironing roll, or pressure member **18**, the orientation of the fibres as described prevents lateral shifting to the extent of forming objectionable bunches or thick spots in the felt. Finally, the felt is of the proper resiliency for use as a cushion for the iron and is adapted, alternately, to absorb moisture and to give out the moisture on being dried, with maintenance of substantially the full resiliency of the original felt.

For use on the ironing roll or pressure member **18**, the bat **19** is disposed in part at least between retaining members including the facing element **20** and the backing member **21**. The facing element **20** is advantageously a fabric of intercrossed strands of heat-resistant yarn, as, for instance, woven asbestos cloth. I have used to advantage an asbestos cloth impregnated and heavily coated with a resin-like phenol-aldehyde condensation product containing a suitable plasticiser or non-volatile softening agent adapted to prevent continual hardening of the resin-like material under the influence of the heat of the machine.

The impregnating material should be non-softenable in water or steam, non-tacky, non-brittle, and non-volatile under conditions of use, and should be non-reactive, that is, chemically inert towards the goods being ironed. Under some conditions, a glycerine phthalate resin, properly plasticized, may be used.

The impregnating material not only coats the individual strands of yarn but also extends as a web or continuous film across the meshes between the interfabricated strands, so that the facing element is, in effect, constituted of the so-called impregnating material re-enforced and strengthened by the fabric disposed therewithin.

When very finely woven asbestos cloth is used in the facing element **20**, the impregnating material may be omitted when the smoothness of surface produced thereby is not desired.

The backing member **21** is suitably constructed of asbestos cloth.

For convenience in application to the ironing roller, the backing and facing elements may be stitched together at **24**.

It is not necessary that the bat should be disposed at all points between the backing member and facing element.

Adherence of the edge of the backing member to the roller and its offset at position **23**, between the adjacent edges of the bat, prevents rotation of the bat independently of the roller and maintains the established angular relationship between the roller and felt. The adhesive selected to effect the adherence is any conventional adhesive that will withstand the conditions under which the assembly is used.

In the assembly described, the facing and backing elements disposed on opposite sides of the bat are free over the major portion of their areas to move independently of the bat.

Besides the advantages enumerated, the asbestos bat provided with the facing element as described, when used in connection with a conventional commercial laundry ironing machine, as described, transfers heat to the goods being ironed at a more rapid rate than is the case when conventional cotton padding is used. The result is a more rapid drying of the goods during ironing, with attendant economy.

My improved ironing pads have been found to last as long as ten months, with consequent enormous saving in money and time to the user. The bat, say, one-half inch thick, after removal from the mandrel during manufacture may be tapered at the ends, as by combing away a part of the material of the bat at the said ends or by building up the central part thereof. Suitably, the taper extends over about ten inches and the outer edges is approximately half as thick as the main portion. This tapering decreases the rate of wear of the facing element of the finished cushion at positions adjacent to the ends of the ironing rollers.

The term "ironing machine", as used herein, includes any ironing mechanism or device in which a hot member is held firmly against the goods to be ironed. Likewise, the term "pressure member" includes pressure-resisting member, as is the case when a heated boot or chest forces the goods against a roll.

It will be understood that the details given are for the purpose of illustration, not restriction, and that variations within the spirit of the invention are intended to be included in the scope of the appended claims.

What I claim is:

1. A cushion pad for ironer rolls, said pad comprising a resilient felted batt constituted predominantly of asbestos fibres, a backing member including an end portion arranged for attachment to the roll and a portion arranged to extend between the ends of the batt and over the outer face thereof, and a fabric facing member for said batt, said backing and facing members being unsecured to said batt over major portions of their areas, whereby the pad is maintained smooth and resilient for an extended period of the operation of the ironer.

2. A cushion pad for ironer rolls, said pad comprising a resilient batt including a multiplicity of thin webs comprised of felted asbestos fibres predominantly oriented in planes extending generally parallel to the faces of the batt, a backing member including an end portion arranged for attachment to the roll and a portion arranged to extend between the ends of the batt and over the outer face thereof, and a fabric facing member for said batt, said backing and facing members being unsecured to said batt over major portions of their areas, whereby the pad is maintained smooth and resilient for an extended period of the operation of the ironer.

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