Nov. 7, 1939. J. E. HOOPER 2,178,633

LAUNDRY IRONING AND DRYING ROLL PAD

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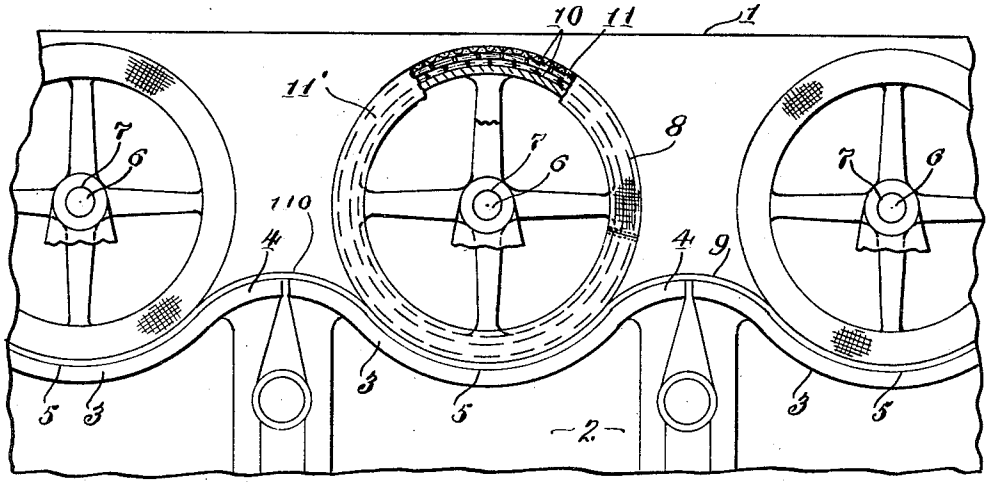


Fig. 1.

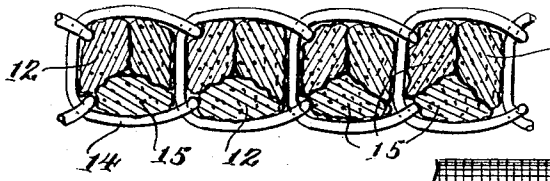


Fig. 2.

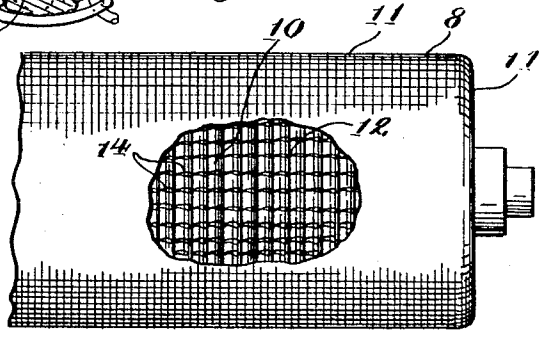
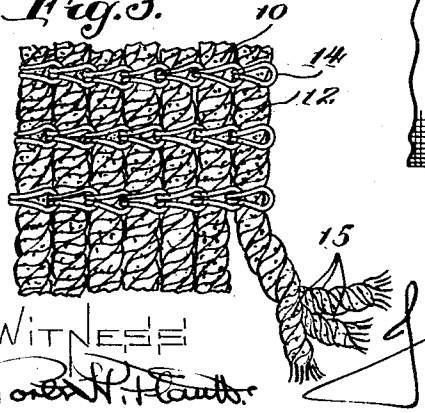


Fig. 4.

Fig. 3.



Witness

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LAUNDRY IRONING AND DRYING ROLL PAD

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1 Claim. (Cl. 38—144)

The invention relates to a cushioning pad for laundry ironing and drying machine rolls and boards and other pressing members, and to a roll for this type of machine covered with resilient padding as hereinafter described. While temperatures much in excess of those now employed can be attained without injury to the fabrics and garments being treated, the use of cotton and similar easily destructible roll paddings makes it necessary to limit the temperatures to which the pads are subjected to about 220 degrees. At slightly higher temperatures the cotton padding carbonizes so rapidly as to make impractical any increase of the temperatures at which the ironing and drying operations are performed. This practice has been followed for a period which is co-extensive with the use of these machines.

The objective of the manufacturers of drying and ironing machines for laundry purposes and the more progressive laundries is to increase by several hundred degrees the temperature maintained beneath the drying apron and thus increase the speed of operation and the capacity of the machines, and hence the working capacity of any given floor space. For this purpose, pads of steel or other metal fibers have been suggested. These have not proved satisfactory as the fibers are relatively brittle and the action of the steam and moisture more or less mixed with washing chemicals on the steel or other metallic fibers causes discoloration.

While various fabrications of asbestos have proved satisfactory for the purposes of insulation, the use of this material as a laundry pad presents difficulties which have prevented its adoption for this purpose previous to the present invention, and it is the discovery of the possibility of using this mixed fiber pad for high temperature ironing roll pads and the adaptation of this material to this purpose and to other types of pressing members for machines of this class, involving the utilization of properties of the material not utilized in mere insulation, and the provision of a cushioning pad of this material which has sufficient tensile strength for close application to the roll and does not disintegrate under ironing pressure, or become matted or compacted in the use to which these rolls are subjected, that forms the subject of this invention. The cushioning pad prevents destruction of buttons and other fastenings and also prevents injury to the fabrics treated.

With the new padding, the temperatures of drying or ironing can be raised to 600 degrees or any suitable temperature, 600 degrees being regarded as the maximum which is desirable, giving much quicker drying and much more efficient operation and several times greater capacity of the machine than at the temperatures suitable to cotton pads. At these temperatures, cotton and similarly inflammable fabrics are dried and ironed without injury.

The working of asbestos fibers presents difficulties due to the lack of felting properties in these fibers. This difficulty is overcome by the mixing with the asbestos of a small percentage of cotton fibers, about 15% being suitable. The mixed fibers can be carded without difficulty and then passed through a roving machine, giving a soft roving of considerable tensile strength and slight twist, two to four turns to the inch being satisfactory. These rovings are then combined forming larger strands, preferably from ⅓ to ½ inch in diameter or smaller or larger if desired. These strands are soft, fleecy, and resilient and, on account of these properties, are suitable to the purpose in hand. These soft strands are combined by means of binding lines preferably formed by knitting. In this way a sheet padding is produced which forms a satisfactory roll covering, overcoming the difficulties as to the higher temperatures regarded as desirable, and having exactly the right degree of yielding to give the desired cushioning of the garments and fabrics being ironed or dried.

While the use of cotton in combination with asbestos in an ironing roll pad to be operated at temperatures well above the critical temperature of cotton, would when first considered be regarded as inexpedient, it has been found by experiment that while the cotton gives the padding the necessary tensile strength to permit the pads to be wrapped tightly about the rolls, the cotton fibers carbonize when the rolls are heated and disappear without loss of efficiency of the padding for this purpose, leaving a padding of approximately 100% asbestos and of sufficient strength, durability, and exactly the right degree of resilience to serve the purpose in hand in a most satisfactory manner. The padding as thus applied and relieved of its cotton content by carbonization withstands the highest temperatures which can be employed for the purposes of these machines and for an indefinite period which is subject to favorable comparison with the length of the life of cotton pads used at temperatures which have proved in practice to be suitable to cotton padding.

While the use of the pad of the invention is

particularly described in connection with ironing and drying rolls, it is also well adapted to use on the opposed pressing surfaces of the press type of machine which has a reciprocating instead of a rotary action.

In the accompanying drawing I have illustrated fragmentarily so much of an ironing or drying machine as is desirable to an understanding of the invention, together with the padded rolls and the sheet padding of the invention.

Figure 1 is a fragmentary side elevation of an industrial laundry ironing or drying machine showing a succession of ironing or drying rolls overlying a heating chest in operative relation thereto and equipped with the padding according to the invention.

Figure 2 is a fragmentary longitudinal section showing the ironing or drying roll padding before application to the roll or pressing member.

Figure 3 is a fragmentary plan of the same on a reduced scale.

Figure 4 is a fragmentary elevation of a laundry roll equipped with the padding in accordance with the invention, the outer covering sheet being broken away to expose the padding.

Referring to the drawing by numerals, each of which is used to indicate the same or similar parts in the different figures:

The illustration, Figure 1, shows a portion of a laundry ironing or drying machine 1 including a heating chest 2, the top of which is composed of a series of plates 3 supported in a manner familiar in the art and, in the form of the machine shown, arranged in the form of a series of parallel alternating ridges 4 and valleys 5 or, as they may be described, alternating convexities 4 and concavities 5, the valleys or concavities being arcuately formed about the transverse axes 6 which are also the axes of the shafts 7 of laundry ironing or drying rolls 8. These rolls may be driven in any suitable manner.

The drawing also illustrates an apron or belt 9 which overlies the plates 3, being located between the rolls and the plates, serving as a conveyor for the clothes or other articles or fabrics being ironed or dried. The rolls 8 as shown are covered with one or more thicknesses of padding 10 as hereinafter described, the same being preferably enclosed within a binder cloth 11 which covers the cylindrical surfaces of the rolls and may extend over the edges of the rolls as at 11'.

The machine 1 is shown as an example of the use of the padding which may also be applied to the opposed pressing members of an ironing machine of the press type, both said rolls and other types of pressing members being referred to herein as the pressing members of such machines.

In accordance with the practice of the invention, the laundry ironing or drying roll padding sheet 10 is formed of a series of strands 12 (see Figure 2) which may be laid side by side in the formation of the sheet padding after the manner of a weft or filling and may consist of a single endless strand extending back and forth from side to side of the fabric, or an indefinite number of parallel strands laid side by side in any suitable manner. The strands 12 are connected together by spaced longitudinal binding lines 14 transversely arranged in relation to the length of the strands. As shown in Figure 3, these binding lines are formed simultaneously by knitting as the strands are laid, asbestos yarn being preferably used for this purpose.

The soft, resilient strands 12 as shown in Figures 2 and 3 are composed each of three rovings, each being indicated by reference character 15 and any suitable number being used. The roving is, in accordance with the practice of the invention, initially composed of a mixture of asbestos fibers and cotton. This is carded or given an equivalent treatment and thus formed into silver which is then given a slight twist, two to four turns to the inch being suitable, to form a soft, fleecy roving. The rovings are then further combined and preferably twisted as shown in Figures 2 and 3 to form the soft, fleecy and slightly resilient strands 12, the amount of twist in either the roving or the final strand being subject to reduction or increase. The proportion of fibers found desirable for this purpose varies by a few per cent above and below 15% of cotton, the remainder being asbestos fibers, and a satisfactory size for the strands 12 has been found by experiment to be from ⅓ to ½ inch, other diameters being usable. The number of layers of the padding sheets on each roll is variable in accordance with the practice of the laundry being equipped and, to some extent, determined by the nature of the fabrics or garments to be ironed or dried, one to three thicknesses being generally employed in the existing practice. Two to four turns per inch in twisting the final thread is found desirable.

A convenient and satisfactory method of applying the sheets is to wind them about the roll, the transverse dimension of the sheet extending in the direction of the circumference of the roll as shown in Figures 1 and 4 in which the strands 12 are shown as extending circumferentially. As aforesaid, the padding sheets are wrapped tightly about the roll and secured by stitching, cementing, or clipping, any number of thicknesses of padding being applied in accordance with the practice of the laundry being equipped. With the press type of machine they are secured at the edges. This padding material is ordinarily covered with a binder cloth 11. In accordance with the former practice, these cloths were of cotton duck, but in the practice of the invention an asbestos fabric is used, the main purpose of which is to protect and retain the pad and to assist in holding the padding sheet in position.

When the rolls are thus equipped and installed, the laundry machine being run at the temperatures of the plates 3 found to be practical with this padding, which temperatures may be carried as high as 600 degrees F., it is found that the cotton content, which has served an important function by imparting tensile strength to the padding in its application to the roll which requires tight winding to give proper placement, is immediately carbonized, leaving a substantially pure asbestos pad. These pads, being composed of strands which are formed of rovings, the fibers being slightly twisted preferably both in the formation of the roving and in the combination of the rovings into the larger strands 12 to give the yielding effect described, are found to have, as thus combined and with the cotton eliminated, sufficient tensile strength to maintain their position on the rolls or pressing surfaces and prevent disintegration of the padding through a long period of use; and the rolls thus equipped and covered with pure asbestos padding have the advantage that they can be used at the higher temperatures now sought for an indefinitely long period without deterioration of the padding, and the new padding affords sufficient resiliency so that the most delicate fabrics in-

cluding garments with buttons thereon can be passed through the machine and dried or ironed without injury, there being, further, no difficulty as with cotton incident to matting or compacting of the material in long use, there being no tendency to compact the material in this way.

In this way, a satisfactory padding is employed at low cost, as this material of mixed cotton and asbestos the inventor has discovered can be applied to ironing and drying members for use at a high temperature without injury to the padding. The cotton providing the necessary tensile strength to facilitate the close application of the padding to the rolls under tension, and being unnecessary to the maintenance of the pad after it is applied, is immediately carbonized without loss by the padding of the strength and resiliency necessary to its use in this way. The initial heating of the roll would ordinarily be performed to condition and complete the padding, though it may be performed in connection with the use of the machine. The method of operation whereby destructible cotton and similar fabrics are dried or ironed at temperatures of the heating members 3 as high as 600° and well above the combustion temperatures of these fabrics, will be fully understood from the foregoing.

I have thus described a laundry ironing or drying roll and a padding therefor, together with the method of applying and operating the same in accordance with my invention, the description being specific and in detail in order that the manner of constructing, applying, operating, and using the invention may be fully understood; however, the specific terms herein are used descriptively rather than in a limiting sense, the scope of the invention being defined in the claim.

What I claim as new and desire to secure by Letters Patent is:

The method of preparing a laundry ironing and drying pad for the pressing member of a laundry ironing or drying machine, which consists in drawing a pad composed of strands of mixed asbestos and cotton fibres over the surface of the pressing member of the machine, securing it in position and heating it to a temperature which is destructive of the cotton thereby destroying the cotton fibres.

JAMES EDWARD HOOPER.