Dec. 15, 1931. A. H. ADAMS 1.837,008

RESILIENT PADDING FOR IRONING MACHINES

Filed Jan. 7, 1928

Fig. 1.

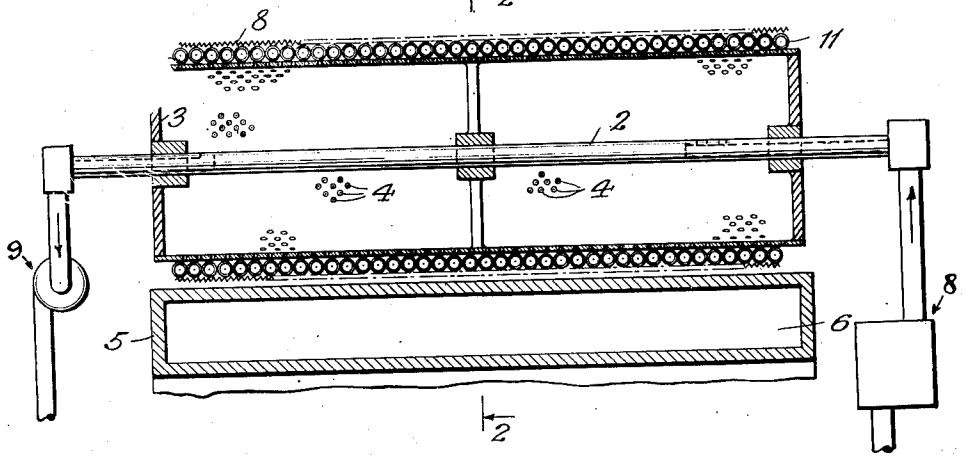


Fig. 2.

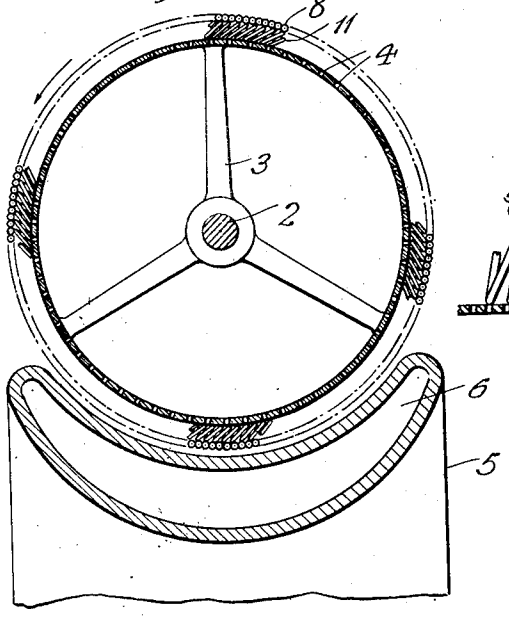


Fig. 3.

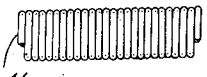


Fig. 7.



Fig. 4.

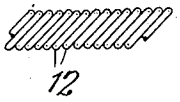


Fig. 6.

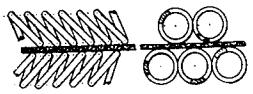
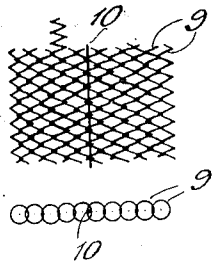


Fig. 5.



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UNITED STATES PATENT OFFICE

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RESILIENT PADDING FOR IRONING MACHINES

Application filed January 7, 1928. Serial No. 245,180.

This invention relates to resilient coverings and paddings and in particular to such as are employed in laundry ironing or pressing machines.

The object of the invention is to provide for laundry machines a resilient padding which overcomes the practical disadvantages that are inherent in paddings constructed in accordance with the prior art.

In ironing machines generally and especially in ironers of the type having fixed steam chests and cooperating ironing rolls it is usual to cover the roll with a pad that is susceptible of compression over a comparatively large portion of its surface and in addition is capable of localized compression, this latter requirement, as is well known, being necessitated by the different thicknesses of goods which are to be pressed. Accordingly another object of the present invention is to produce a resilient pad for laundry machines which is of substantially equal resiliency over the entire surface thereof and is capable of localized compression at any point thereof.

Heretofore it has been the practice to employ resilient paddings composed of individual or discrete springs which support the covering away from the roll proper. However, the use of such a padding necessitates the employment of a relatively thick covering of felt or cloth fabrics in order that the spaces between the springs may be adequately bridged. It has been found that such coverings while they are pervious or porous to a certain extent, nevertheless offer a substantial impedance to the steam or vapor that is liberated from the garment being ironed with the result that they are continually absorbing moisture and after a time become matted and soggy and eventually hard and non-resilient. Accordingly, it is one of the chief objects of the present invention to provide a resilient padding and covering for laundry ironers which offers comparatively little obstruction to the passage of steam or vapor therethrough and which has no tendency to absorb any moisture that is liberated from the garments being ironed.

A feature of the invention resides in a self-drying pad for laundry machines, thus avoiding the necessity of employing either special heating means or suction or compressed air apparatus for drying out the padding since a padding according to the present invention has no tendency to become soggy or matted after continued use.

A further feature of the invention pertains to a resilient element for a presser roll or buck which is preferably wrapped around the roll to impart the desired resiliency thereto and provides a substantially free path for liberated steam or vapor.

Another feature has reference to a metallic covering for a resilient laundry pad which covering has substantial resiliency in one direction and obviates the necessity of employing special fabric coverings which absorb moisture.

A still further feature resides in a self-drying padding and covering for laundry machines in which the covering is of a resilient metallic material and the padding is a compressible metallic element in the form of a convoluted spring.

Other features and advantages not specifically enumerated will be apparent after a consideration of the following description and the appended claims.

For the purpose of enabling a clear understanding of the invention to be attained the same will be disclosed herein as applied to a laundry ironer of the flat work type, but it is to be understood that the showing in this respect is merely illustrative and that the invention is equally applicable to laundry presses of the platen or other type as shown in part in Fig. 7.

Referring to the drawings there is shown in Fig. 1 a longitudinal cross-section of a portion of a flat-work ironing machine provided with a resilient padding according to the invention.

Fig. 2 is a sectional elevation of the portion of the machine disclosed in Fig. 1 and taken along the line 2—2.

Fig. 3 is a detail showing a portion of the resilient pad prior to deformation.

Fig. 4 shows a portion of the element of Fig. 3 in its deformed character.

Fig. 5 is an enlarged view in side elevation and in vertical section of a portion of the resilient metallic covering prior to its application to the roll of Fig. 1.

Fig. 6 shows in side elevation and in vertical section a portion of a padding made up of oppositely inclined elements such as shown in Fig. 4.

Fig. 7 is a view of a portion of a pad and support showing a modified form of construction in side elevation and in vertical section.

Considering Fig. 1 especially, it will be noted that the ironing roll proper comprises a cylinder 1 preferably of relatively thin non-corrosible metal which is provided at various points throughout its length with the supporting members 3 to impart radial strength to the roll 1 and also to provide means for supporting said roll on the shaft 2. The roll 1 is preferably provided with a great number of perforations 4 over the entire working surface in order to offer the minimum of obstruction to the passage of steam or water vapor therethrough. I call this type of roll and others provided with open spaces in the surface, open work rolls. The shaft 2 is connected in any well known manner to suitable driving means for rotating the roll 1 at the desired rate. Appropriately mounted in contiguity with roll 1 and surrounding the lower portion thereof is a steam chest 5 which may be of any well known construction, said chest having a longitudinal bore 6 connected to a source of steam or other heating fluid, in order that the garments which pass between the roll and said chest may be heated and dried. The concave or ironing surface of chest 5 is preferably smooth and highly polished.

In order to enable the ironer to take care of different thicknesses of material passing therethrough, the roll 1 is provided with a resilient padding which has a covering 8, a portion of which is shown in detail in Fig. 5. Said spring covering comprises in the main a spring mesh made up of a plurality of fine wire springs 9 which are interlaced at alternate convolutions, as clearly shown in Fig. 5, thus providing a finely woven resilient metallic cloth. This type of cloth is necessary as a covering in order that when very hard materials such as buttons or the like are passing through the ironer the pressure on the covering will not cause it to be permanently dented or deformed. The fineness of the mesh of covering 8 may be designed in accordance with the degree of fineness of the goods to be ironed. If exceedingly fine goods are to be ironed an additional covering or coverings each of increasing fineness of weave may be used. If desired a special covering of very fine metal cloth may be provided in addition to the covering 8, as shown in Fig. 7, the object being to avoid the use so far as possible of animal or vegetable fibre cloth which is absorbent, and subject to being burned and of relatively short working life as compared with metal coverings of the character described. Shaft 2 is made hollow at both ends in the well known manner and has coupled to one end thereof a source of heated air 18 and at the other end thereof a suction means 9 which tends to move the heated air through the roll.

The resilient padding for roll 1 comprises a convoluted spring 11 which is wrapped helically around the roll. While resilient paddings employing individual or discrete springs arranged about the periphery of an ironing roll are well known, it is found in practice that such paddings have not the required resiliency or are unequally resilient at different points, and are costly in manufacture and assembly. Furthermore the use of a plurality of separate springs for padding necessitates the use of relatively heavy material such as felt, or heavy fabrics to bridge the spaces between the individual springs. In accordance with the present invention all the above described disadvantages are overcome by using a spring of the shape shown in Fig. 4 which is wrapped around the roll 1, preferably with the turns in overlapping arrangement, as shown most clearly in Fig. 2. The spring of Fig. 4 may be formed in any suitable manner, one preferred method of forming this spring being as follows: A closely coiled spring as shown in Fig. 3, of the requisite diameter, for example, of the order of 3/8 of an inch and preferably of non-corrosible metal such as a nickel copper alloy sold under the trade name Monel, or bronze, is passed between two cooperating rollers, one of which is rotating at a slightly faster rate than that of the other, resulting in a skewing of the spring to the shape shown in Fig. 4 wherein the individual convolutions 12 retain substantially their original shape but are given a permanent set or inclination toward the spring axis as shown. It is obvious, of course, that the degree to which the convolutions are inclined from the straight position shown in Fig. 3 may be determined by the resiliency that is required of the padding. For example, if the individual convolutions are very slightly inclined and are very close together the springs will have little resiliency in a direction perpendicular to the spring axis, and this resiliency will increase as the inclination from the vertical and the spacing between turns are increased.

When the spring has been prepared in the form shown in Fig. 4 it is fastened at one end in any suitable manner to the roll 1 and is wound around the same with the individual convolutions 12 slanting in a direction opposite to that in which the roll is to rotate. It is preferable that in wrapping the spring around roll 1 that each convolution 12 be inclined at substantially the same angle to the

shaft 2 in order that the roll in rotating may have substantially the same resiliency at every point thereof. When the entire working surface of the roll 1 has been covered by the spring 11 the free end of said spring is fastened to the roll in any suitable manner to prevent the spring from unwinding. In order to insure that the spirally wrapped spring shall at all times be in engagement with the roll 1 it may be desirable to thread a cord or wire 13 through the interior of the spring turns 12, the cord being drawn tightly around the roll and fastened at both ends in order to positively hold the spring against the roll surfaces. The flexible metallic covering 8 is next wrapped around the spring 11 and the ends of said covering may be fastened by passing a rod or wire 10 through the overlapping end helices of the covering, or the ends of the covering may be held together by screwing in an additional helix which will link the two end helices together without the rod as shown in Fig. 5.

When the padded roll assembled as above described is put into use and the garments inserted between the roll 1 and chest 5, due to the all-metal character of the roll pad and covering, a relatively large quantity of heat is conducted from the steam chest with the result that any moisture that may be driven out from the garments is immediately vaporized and cannot condense either on the covering 8 or within the spring padding proper, but travels through the perforations 4 to the interior of the roll, which may be connected to a source of heated air for preventing condensation within the roll. Because of the openness of the covering, the padding and roll 1 the steam which is liberated from the moist garments encounters very slight obstruction and may pass with freedom to the interior of the roll.

While only one layer of spring padding is shown on the roll of Fig. 1 it may be found desirable to employ a plurality of similar superposed layers, in which case it is preferable to arrange alternate layers with the spring convolutions slanting in opposite directions as shown in Fig. 6, it being understood that the outermost layer is so wrapped as to have the convolutions 12 slanting in a direction opposite to that of the rotation of the roll.

It will be understood that various changes may be made from the embodiment disclosed in the drawings without departing from the spirit and scope of the invention, for example, the padding instead of being made up of a spring of circular cross-section may be of square or any other desired cross-section, and instead of a circular roll the padding and covering may be used on a flat pressing surface or buck such as used in pressing machines. The essence of the invention lies in the provision of a roll of such openness in combination with a pad and covering such as described so that the minimum of impedance or absorption may occur to the steam in its passage into the free space within the roll.

From the foregoing it will be seen that a pad constructed as described is economical of manufacture, readily assembled and does not become matted with the steam or moisture that is liberated from the damp garments. Furthermore, because of the fineness and resiliency of the pad covering it is not necessary to employ cloth or fabric coverings which either tend to retain moisture or require special apparatus for blowing or sucking the moisture therefrom. In addition a metallic covering of the type disclosed is not subject to deterioration or burning as are the usual fabric coverings and may be rapidly removed from, and mounted on the ironing roll.

What I claim is:

1. In a laundry pad the combination of a convoluted spring having adjacent convolutions inclined in overlapping arrangement, and a resilient metal covering above said spring.

2. In combination a convoluted spring wrapped into cylindrical form, and a finely woven metallic covering wrapped around said spring.

3. In combination a self drying laundry pad comprising a cylindrical resilient element in the form of a convoluted skewed spring, and a non-absorbent covering wrapped around said element.

4. In combination a non-absorbent metal laundry pad comprising a convoluted spring, and a pervious resilient wire cloth covering for said spring, an open work support for said spring, said covering and support offering substantially negligible impedance to the passage of water vapor therethrough.

5. In a laundry machine, a non-absorbent padding and a resilient non-absorbent covering therefor, said covering comprising a plurality of convoluted springs with adjacent convolutions interlaced.

6. In combination a presser element, a resilient pad wrapped around said element and comprising a convoluted spring and a metallic interlaced work covering said spring, said covering offering a substantially negligible obstruction to the passage of steam or water vapor therethrough.

7. A non-absorbent roll covering for a flat-work ironer comprising an all-metal resilient pad and an all-metal covering for said pad.

8. In combination an open-work ironing roll, a convoluted spring wrapped around said roll and a metal mesh covering for said spring.

9. In combination an ironing roll having an open-work peripheral surface, a reticu-

lated covering for said roll, and a non-absorbent resilient padding between said covering and said roll, said reticulated covering comprising fine wire gauze adapted directly to contact with the surface to be ironed.

10. In combination an open-work base, a spring padding covering substantially the entire peripheral working area of said base, and a resilient non-absorbent covering for said padding, said padding, covering and base being adapted to offer very slight obstruction to the passage of steam or water vapor therethrough.

In testimony whereof, I have signed my name to this specification, this 3rd day of January, 1928.

ARTHUR H. ADAMS.