May 26, 1953 L. N. POLK ET AL 2,639,519

SILICONE RUBBER IRONING PAD

Filed Sept. 5, 1950

Fig. 1.

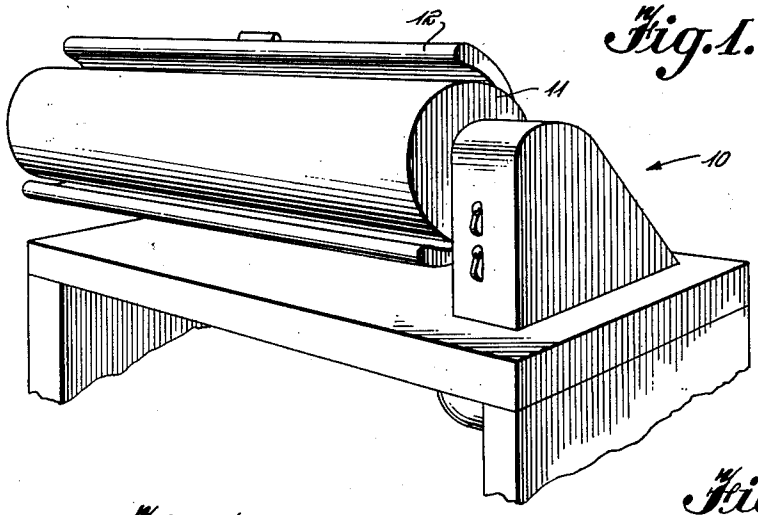


Fig. 2.

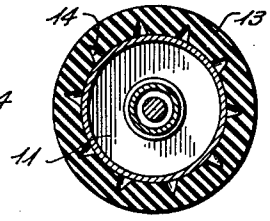


Fig. 3.

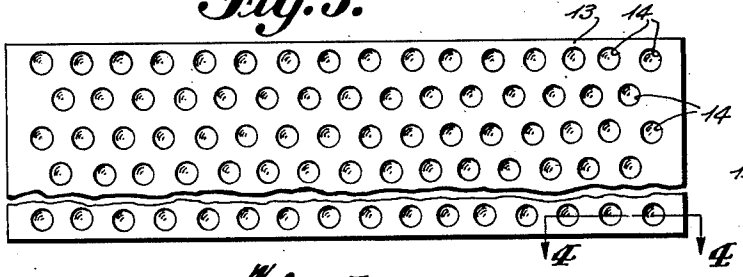


Fig. 4.



Fig. 5.

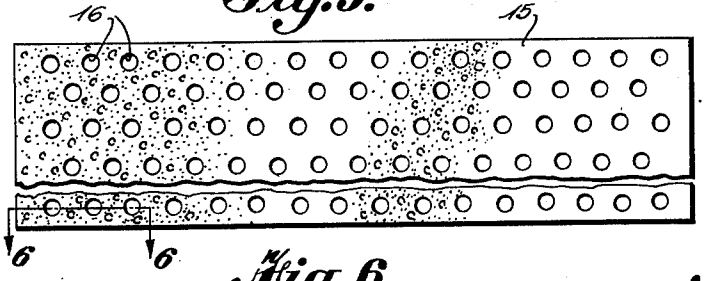


Fig. 6.



Fig. 7.

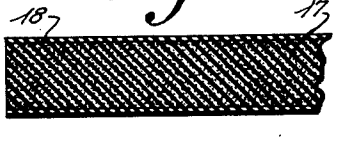
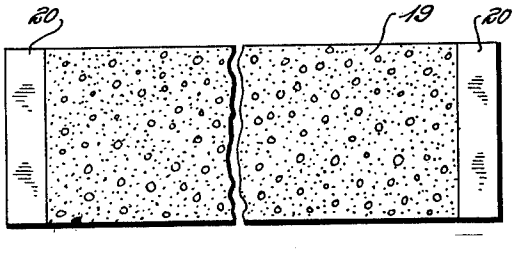


Fig. 8.



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SILICONE RUBBER IRONING PAD

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2 Claims. (Cl. 38—66)

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This invention relates to pads and covers for steam ironers, pressing machines, mangles and the like and more particularly to a unitary cushion pad of resilient heat-resistant material for use on such structures.

The laundry business has in recent years become very highly competitive and many efforts have been made to improve the equipment used in laundry so as to produce a better quality piece of work in a more efficient and economical manner. The present invention is directed to that part of the entire laundry process known as ironing.

The present-day method of ironing includes equipment which is generally known as a mangle. The mangle includes a buck, in most cases cylindrical, mounted for rotation upon a horizontal axis, and a heated head pivotally mounted for control contact with the rotating buck. Some models do, however, have a flat rectangular buck and a flat rectangular head. The fabric to be pressed is placed on the buck, and the heated head is by hand or by other means brought into contact with the fabric. This model is usually referred to as the scissors type. Now, it is important that the fabric be exposed in some way to moisture to allow the fibers therein to become more flexible. After they have become more flexible, the pressing action of the head upon the buck smooths the fibers and causes them to dry and set in a pressed attitude. The higher the temperature of the heated head the more quickly the fabric is dried, the limiting factor being, of course, the yellowing or scorching of the fabric when the application of heat is continued after the moisture is removed.

In the past, it was thought desirable to use an absorbent pad in order to facilitate the escape of moisture from the garment being ironed. When the ironing process was one designed to press cotton and garments of synthetic material such as shirts, dresses, etc., the garments were moistened prior to ironing.

When the process was designed to press woolen or silk garments, the garments were moistened by causing steam to flow through the pad to make the fibers pliable. In this case, since the steam passed through the pad, the pad did not accumulate a surplus of moisture so that its absorbency was not of importance.

When absorbent pads were used in the above-mentioned "cotton" ironing, it was necessary to use excessive amounts of moisture in order to obtain a satisfactory smoothing. If insufficient moisture was used, the absorbency of the pad caused the garment to dry too rapidly resulting in a "rough dried" finish. The use of larger amounts of moisture required the use of larger amounts of heat for its vaporization. In the process above referred to as the "wool" process, the absorbency of the pad was of no importance. Pads of either impervious texture or non-impervious texture, either absorbent or non-absorbent, could be used. However, the pads used in the prior art, be they impervious or not, absorbent or non-absorbent, were all subject to disadvantages which greatly reduced the efficiency of the ironing operation. Those that are pervious and absorbent require an excess of moisture for moistening the garments or the like, with the occurring disadvantage previously mentioned. Additionally, they had certain disadvantages common also to impervious and non-absorbent pads which will now be amplified.

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It is a common practice to conduct the ironing process under conditions of periodic rapid heating to high temperatures of the order of 320° F. to 500° F., followed by rapid cooling. The ability of the pad to stand such high temperatures with the following rapid cooling is of great importance.

In the past, many attempts have been made to use natural rubber and some of the available plastics as pads in ironers. These materials however, quickly harden, crack and deteriorate under rapid heating and cooling. This deterioration is accompanied by the release of decomposition products which penetrate and adhere to the garments being ironed giving rise to unpleasant and undesirable odors. Since the silicone rubbers do not break down, they do not produce unpleasant odors under the conditions of normal operation nor do they produce decomposition products which penetrate the garment and destroy the garment's utility.

Other ironing pads in the past were clothed with a fabric made of cotton or similar material. Such material was easily scorched and distintegrated so that reclothing was frequently necessary in many cases at intervals of one week or less. Other ironing pads included metal springs and wire mats which soon became brittle and broke down under the repeated stresses.

Some pads were made of asbestos, fiber glass, jute, and similar fibrous material. These materials, due to the extreme pressure accompanying the ironing operation, soon matted down into a compact mass and lost their resiliency. The resiliency of the pad is of extreme importance particularly when a superior smooth finish is desired and the garment includes buttons, pins, clasps or the like.

This invention relates to pads made of silicone rubber. Silicone rubber is the name given to one of a number of chemical compounds classified as condensation polymers and sometimes known as "silicones." When properly cured, these compounds are in general odorless, hydrophobic, insensitive to water, and show superior resistance to heat. The silicone rubbers retain their resiliency when repeatedly heated to temperatures as high as 500° F. and then cooled to room temperature.

This invention is concerned with the peculiar

ability of the silicone rubber pads to retain their resiliency, to conserve the heat transmitted thereto from the heated head, to concentrate the heat on the garment being ironed, the extreme durability of such pads, their ability to withstand high temperatures and the effect of pressurized strain. These silicone rubber pads eliminate all of the disadvantages of the prior art pads and contribute advantages never heretofore available. The silicone rubber pads are particularly efficient for steam ironers which are normally operated at temperatures ranging from 320° F. to 350° F. Natural rubber or other similar plastic materials or cotton-like fabrics are unable to stand up under such high temperatures. It is therefore an object of this invention to provide an ironing pad which applies a far more attractive finish to garments ironed on steam ironers or the like.

It must be remembered that although the present invention is herein described with reference to a "mangle" type ironer, other types are also contemplated. These other types may include the "scissors" type that has previously been explained. Also the instant pads find applicability with the type referred to in the art as the "cylinder" type or the "chest" type. Additionally it must be noted that the shape and size of the buck or head is not of importance. It is well within the skill of the art to vary the shape to accommodate certain portions of the garment such as shirt cuffs, collars, etc.

Another object of this invention is to provide a soft cushion-type pad which will have superior resiliency and thereby protect, during the ironing operations, any buttons or other such elements mounted to the garment.

It is still another object of this invention to provide a soft-cushion-type pad of silicone rubber material which is extremely durable and practically unaffected by the high operation temperatures so as to eliminate the frequent necessity of reclothing the machines or replacing the entire pad.

Other and further objects of the invention will become apparent from a more detailed description of the invention.

Figure 1 is a view in perspective of a mangle of the type used in present day ironing processes;

Figure 2 is a cross-sectional view of the mangle buck with an ironing pad constructed in accordance with this invention mounted thereto;

Figure 3 is a fragmentary bottom plan view of a pad constructed in accordance with this invention;

Figure 4 is a view taken along the line 4—4 of Figure 3;

Figure 5 is a fragmentary bottom plan view of another embodiment of the pad constructed in accordance with this invention;

Figure 6 is a view taken along the line 6—6 of Figure 5;

Figure 7 is a fragmentary cross-sectional view of another embodiment of the pad constructed in accordance with the teachings of this invention;

Figure 8 is a top plan view of another embodiment of the pad constructed in accordance with this invention.

Referring first to Figure 1, there is shown a mangle generally designated by the numeral **10** having a cylindrical buck **11** and a heated head **12**. This mangle is constructed similarly to those ordinarily used in present day ironing processes. Of course the buck may be flat and substantially

rectangular in shape, as also may be the heated head.

Referring to Figure 2, the buck **11** has mounted thereto a silicone rubber pad **13**. This pad is mounted about the cylindrical buck **11**. The pad has a plurality of cup-shaped depressions **14** on the bottom face thereof. As shown in Figure 3, these depressions are located at various points on the bottom of the pad. More or less of these depressions may be used and their size may be varied to vary the softness of the pads in any desired manner. Thus for maximum firmness a solid piece can be used.

As shown in Figure 4, these cup-like depressions are usually made cone-shaped.

What has been shown in Figures 2, 3 and 4 is a silicone rubber pad having an impervious surface. The pad is of solid silicone rubber. The pad shown in Figures 5 and 6 is a porous silicone sponge rubber pad **15** which has had the surface layer removed therefrom to make it absorbent. Also the pad has a plurality of apertures **16** therein to assist in allowing the steam to reach the garment.

Referring to Figure 7, there is shown another embodiment of the invention illustrating a pad **17** having the surface layer **18** still intact.

Referring to Figure 8, there is shown a pad **19** of silicone sponge rubber having added thereto an impervious strip of solid silicone rubber **20**. This combination of a strip of solid silicone rubber near the edges, where the creases of trousers, etc. are formed, with a soft silicone rubber sponge in the center where it is desired to raise the nap, provides a most satisfactory arrangement for high speed pressing of garments.

What have been illustrated are preferred embodiments of the invention. Other embodiments obvious from these teachings to one skilled in the art are also included within the spirit of the invention and within the scope of the following claims.

What is claimed is:

1. A pad for mounting to the pressing surface of an ironer, said pad comprising a substantially rectangular sheet of silicone sponge rubber, said sheet having a co-planar narrow piece of solid silicone rubber attached to the end of said sheet at at least one of the short sides thereof.

2. A substantially rectangular pad for mounting to the pressing surface of an ironer that comprises a substantially rectangular sheet of silicone sponge rubber, said sheet having a plurality of hollow recesses spaced on the bottom surface thereof extending upwardly from said bottom surface to adjacent the top surface thereof, said recesses being conically shaped with the apex of said cone being adjacent the upper surface of said pad, said sheet having a co-planar narrow piece of solid silicone rubber attached to the end of said sheet at at least one of the short sides thereof.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,107,052	Church	Feb. 1, 1938
2,125,603	Crockford	Aug. 2, 1938
2,490,981	Reiss et al.	Dec. 13, 1949

FOREIGN PATENTS

Number	Country	Date
612,410	France	July 31, 1926