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W. F. GRUPE

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CORK ENVELOPE FOR LAUNDRY ROLLS

Filed June 9, 1924

Fig. 1.

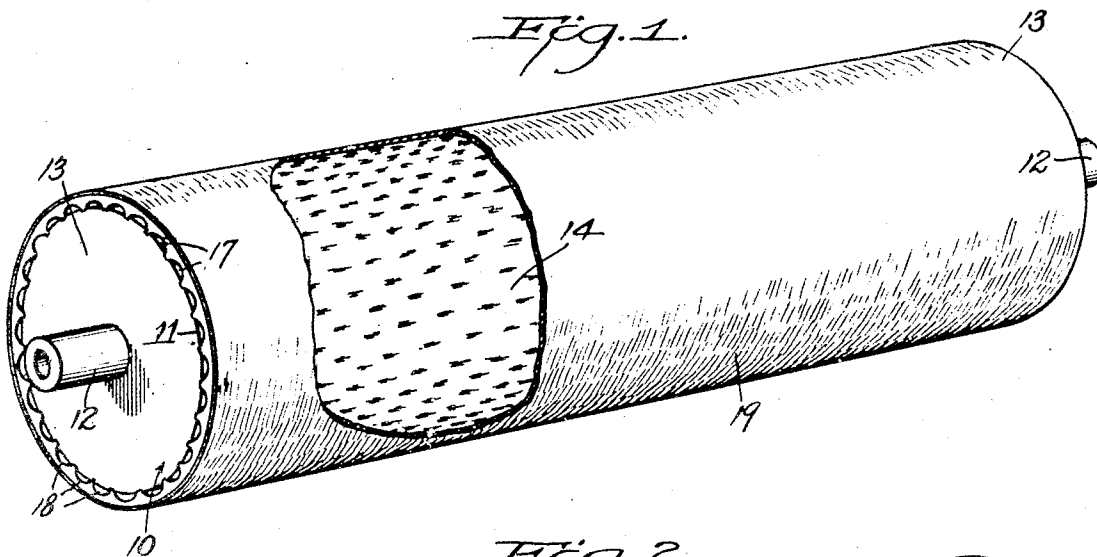


Fig. 2.

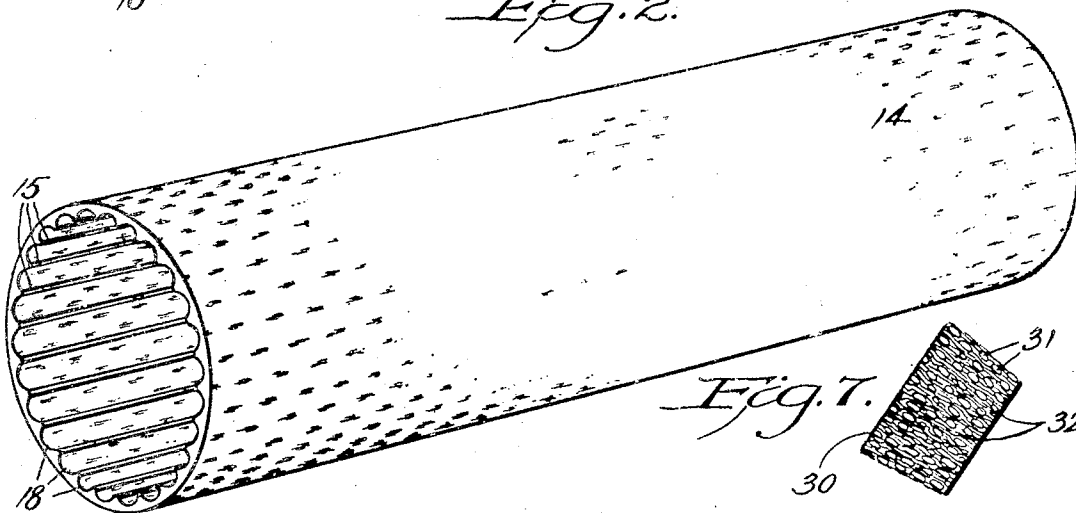


Fig. 7.

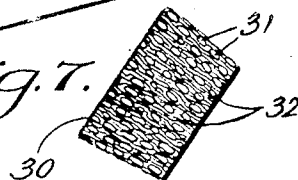


Fig. 3.

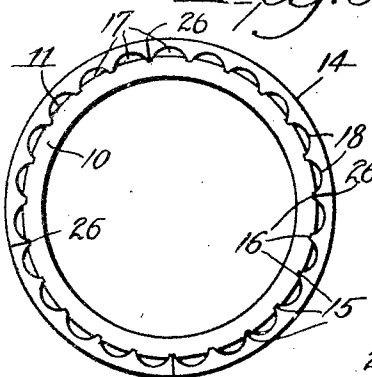


Fig. 4.

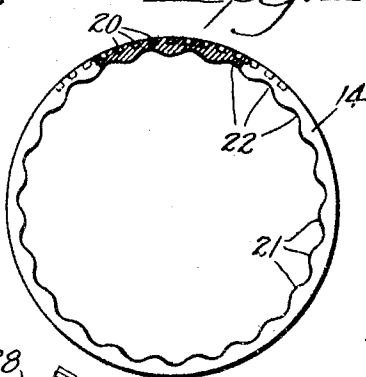
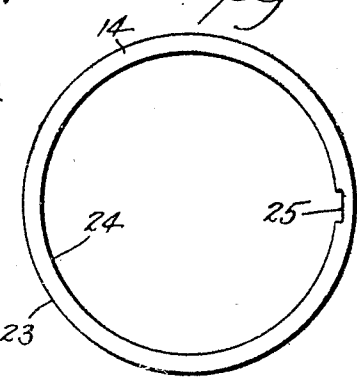


Fig. 5.



WITNESSES 26

Oliver H. Adams

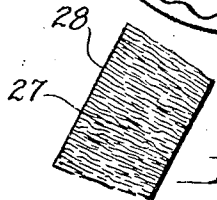


Fig. 6.

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## UNITED STATES PATENT OFFICE

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## CORK ENVELOPE FOR LAUNDRY ROLLS

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This invention relates to envelopes for rolls of mangles and other laundering and similar devices.

An object of the invention is to provide rolls of the above character with a facing of cork in such form of material and of arrangement relative to the body of the roll whereby the envelope provides improved ironing and similar laundering operation.

The body of a roll for a mangle and similar laundering and like apparatus is usually of steel of substantially cylindrical form. Here-  
tofore, it has been proposed to surface the cylindrical face with natural cork, applied in assembled form of separate blocks, but such procedure has not been successful by reason of the difficulty of securement of the blocks to the cylindrical face of the roll, and further by reason of such arrangements giving rise inevitably to spaces or clearances in which the steam is entrapped, causing disintegration of natural cork. Such prior procedure is commercially impractical also by reason of the continuous softening and accompanying continuous reduction in effective diameter of the facing of natural cork, due to the pressure arising in the ironing operation.

It has also been heretofore proposed to employ cork particles in the form known as composition cork, wherein albumen, casein or like binding material is employed to bond the cork particles to one another, but such resulting cork facing is defective for laundering operations by reason of the disintegration of the binding material due to chemical action induced under the necessary heat and pressure conditions, and undergoing putrefaction, with attendant physical crumbling and breaking up of the cork particles.

Pursuant to the present invention, the cork facing is formed of cork particles bonded to one another under pressure and elevated temperature greatly exceeding the pressure and temperature of laundering conditions and causing the natural resins of the cork to exude to bind the cork particles to one another and resulting in a mass possessing resiliency and other characteristics of such nature most advantageous for laundering purposes; preferably, the envelope is as a complete ring to

encircle the roll, and also extending from end to end of the body of the mangle or other laundering roll. Such cork facing is molded from cork particles and shaped in the mold or the like to have a ring configuration of an inner diameter corresponding to the outer diameter of the body of the roll.

Further features and objects of the invention will be more fully understood from the following detail description and the accompanying drawings, in which

Fig. 1 is a perspective view of a mangle roll provided with a cork facing embodying my invention; about the improved cork facing are wrapped the usual linen or like fabric cloths;

Fig. 2 is a perspective view of the improved cork facing, shown in Fig. 1;

Fig. 3 is an end elevation of Fig. 2;

Fig. 4 is an end elevation of a modification, of the invention;

Fig. 5 is an end elevation of a further modification of the invention;

Fig. 6 is a detail view on a greatly enlarged scale indicating one manner of structure of cork particles bonded pursuant to my invention; and

Fig. 7 is a similar detail view showing a modified form of bonded structure of cork particles.

Referring to Fig. 1, the roll 10 represents the usual or approved form of the body of the roll for a mangle, or laundering machine or the like, usually of steel, and of substantially cylindrical form. Such roll 10 may be mounted on oppositely disposed, central trunnions 12, projecting from the opposite flat end faces 13, 13.

The usual mangle or like laundering machine embodies a set of two or more individual rolls 10, mounted in suitable relation to a steam chest, of steel or the like, (not shown) and formed hollow for the reception of steam or the like heating medium, and usually covered with cloths; the articles to be ironed or otherwise laundered are passed between the set of rolls and the steam chest.

About the cylindrical surface 11 of the roll 10 is applied the facing 14 of cork, see Figs. 2 and 3, formed as a ring or annulus prefera-

bly extending completely about the cylindrical face, and from one end 13 to the opposite end 13 of the body of the roll 10.

The resulting envelope 14 of cork is removably locked to the cylindrical surface 11 of the roll 10 by suitable means, as by providing the cork envelope 14 with interior projections 15 and the cylindrical surface 11 of the body of the roll 10 with corresponding slots 16, see Fig. 3. Such projections 15 may be formed on the inner face of the cork ring 14 in uniform spacing and formation, thereby providing supplemental to the locking feature the resilient effect of air cushions afforded by the clearances 17 between the inner faces of the curved portions 18 of the projections 15 and the outer face 11 of the body of the roll 10.

As one method of forming the cork facing or envelope, cork granules or like particles, are fed into a suitable mold, such as a two-part mold, i. e., a closed outer, female mold section and an inner male mold section, and the particles progressively fed between the mold sections, with application of the required pressure as by means of a suitable tamping tool, to fully fill the mold, and then subject the mold and enclosed cork particles to an elevated temperature, to effect the exuding of the natural resins of the cork particles through the natural pores of the cork particles, and exteriorly of the cork particles, whereupon after cooling, the natural resins serve as a binding medium for the cork particles and the cork is transformed into a substantially continuous mass of substantially homogeneous composition and wholly devoid of pores or perforations. The resulting binder is insoluble in water and withstands the temperature and pressure of ironing and like laundering operations.

If desired, resins of higher fusion or higher plastic point as compared with the resins of natural corkwood, may be added to the cork particles while in the mold.

The usual cloths 19 of linen, or the like, are applied to the exterior of the cork facing 14, and of a thickness as may be desired.

As auxiliary means for providing the cushioning effect of the cork facing, the cork facing 14 may be molded to have recesses, 20, see Fig. 4, preferably disposed substantially uniformly about the exterior surface of the cork facing 14. By the heat and pressure treatment of the cork particles while in the mold, the inner faces of the recesses 20 will have become coated with the resins natural in the cork or as added in the molding stage, thereby coating the inner faces of the recesses 20 with a steam and moisture resistant envelope.

In Fig. 4, I have shown a modification of the invention wherein the inner face of the cork ring 14 is fluted or corrugated, as indicated at 21, for engagement with the outer

face 11 of the body of the roll 10; between the inner faces 22 of the flutings and the roll are provided clearances serving as cushions.

In Fig. 5, the cork ring 14 is formed similarly as hereinabove described, and provided with a substantially cylindrical outer facing 23 and a substantially cylindrical inner facing 24; the diameter of the inner facing 24 is preferably such as to make a substantially tight fit with the outer cylindrical facing 11 of the body of the roll 10; to enhance the locking of the cork envelope 14 of the form shown in Fig. 5, relative to the cylindrical face 11 of the body of the roll 10, a key-slot 25 may be molded or cut on the inner face 24 of the cork ring 14, for receiving a wedge of steel or like material, positioned under pressure.

If desired, the ring of the form shown in Fig. 5, may be provided with exteriorly disposed recesses, such as the recesses 20 shown in the modification of Fig. 4.

The cork facing or envelope produced in accordance with my invention may be applied as a number of sections, in end to end engagement about the periphery of the roll, and may be of semi-cylindrical as indicated at 26, quadra-cylindrical or like sectional formations.

Preferably, the treatment of the cork particles is carried out at a temperature of upwards of 500° Fahrenheit and at a pressure sufficient to effect the bonding of the cork particles to one another. The pressure of the bonding treatment may be varied in correspondence to the desired degree of hardness and resiliency of the resulting product; as an example, the cork particles may be compressed in the treating mold from a volume of, say, three to a volume of unity.

At ordinary temperatures, the resulting cork facing or envelope is relatively hard and readily withstands shipment and the comparatively severe handling in installation on the laundering roll.

By greater reduction of volume of the treated cork particles, the degree of hardness of the resulting cork mass may be increased; and, correspondingly, by decreased reduction of volume of the treated cork particles, the degree of hardness of the resulting cork mass is decreased.

At the temperature of ironing or like laundering operation, usually approximately 250° Fahrenheit, the cork facing or envelope possesses most admirable qualities for effecting smooth ironing notwithstanding varying thicknesses of the laundered materials. At the ironing temperature, the cork mass accommodates itself at all times to abrupt changes of thickness of laundered material due to the presence of buttons or like addenda of relatively hard material, thereby avoiding damage to the same, and is most effective in emphasizing raised or relief or-

namentation of laundered material, such as embroidered tablecloths, bed coverings and the like.

5 The above noted nature of flexing resiliency at ironing temperatures and comparative hardness at ordinary temperature are more advantageously attained by the use of flat particles of cork of varying superficial areas and of a thinness of the magnitude of  
10 ordinary paper; such thin particles 27, see Fig. 6, are assembled and bonded in the resulting mass 28 in more or less overlapping relation to one another.

15 In a similar manner, cork particles derived by "grinding" so-called tapered cork waste, resulting in the manufacture of tapered corks and comprising flat shavings of tapered thicknesses may be employed pursuant to my invention to yield a cork mass of  
20 interlocked flat particles varying in thickness from that of ordinary paper to that of cardboard.

Upon feeding such cork particles of flat formation into a mold of the type referred  
25 to hereinabove, and disposing the outer and inner mold sections with their longitudinal axes extending substantially vertically, and compressing the same by tamping and subjecting the same to the baking temperature as hereinabove described, the resulting mass  
30 is constituted of cork particles 27 bonded to one another with their flat faces in overlapping relation extending substantially radially with respect to the center of the molded  
35 cork envelope or facing 28, as indicated generally in Fig. 6. Accordingly, the resisting compression within the cork particles arising in the ironing operation is directed in planes substantially parallel to the flat faces  
40 of the interbonded cork particles.

In Fig. 7, I have illustrated a portion of an envelope or padding 30 formed pursuant to my invention from a mixture of relatively thick particles 31 and thin particles 32, as  
45 by intermixing granular cork waste or ground cork disk waste with "ground" cork flakes in varying proportions; in such instances, the thin particles 32 interbond the thereby flattened relatively thick cork particles 31 as well interbond one another. Such result may be attained with an intermixture of cork particles having thicknesses  
50 varying from that of tissue paper for the thin particles 32 to cardboard for the relatively thick particles 31, or a range of from ten to unity in relative thicknesses.

It will be observed that in the tamping or like compression operation preliminary to the baking treatment, the relatively thick  
55 cork particles are compressed irrespective of location in the mass, in the direction parallel to the direction of length or axes of the mold, that is to say, substantially at right angles to the direction of compression arising in the ironing or other laundering operation. Such

relation of compression of all particles in the cork padding preserves fully freedom of the resiliency of the cork particles under ironing conditions in the direction substantially parallel to their direction of length, i. e., parallel  
70 to their flat faces, and it is my belief that the superior nature of resiliency attending the state of comparative softness of the cork padding at ironing temperatures is ascribable to such relation of the compression between the  
75 cork particles effected in the baking treatment.

If desired, the cork padding may be of sheet form and wound about the ironing or other  
80 laundering roll to attain the desired effective diameter.

To form such sheet of cork padding pursuant to my invention, the cork particles preferably of flake form are laid upon another, the flat faces thereof being positioned in more  
85 or less overlapping relation to one another; and thereupon, the mass of cork particles are compressed under minimum pressure represented by the reduction in volume from four to one and then baked similarly as hereinabove described to the molded cylindrical  
90 form.

The mass is bonded as a whole by the resins distributed more or less through the mass in the baking stage. However, the bonding  
95 between the cork particles is not continuous between the cork particles, but at spaced points, thereby giving rise to intervening relation non-bonded areas and consequent air spaces. Accordingly, under the ironing or  
100 similar laundering conditions, such nature of interbonding permits the cork particles to be flexed relatively to one another, which action is enhanced by the intervening cushioned air.

Padding formed pursuant to my invention  
105 is also applicable to ironing and other laundering machines of the so-called flat bed type, for which use the cork padding is molded in flat formation. In the forming of such flat cork padding, the particles are fed into a suitable mold in the direction of length of the  
110 mold, the mold being positioned vertically with respect to its length to thereby locate the particles with their faces of greatest area to extend substantially horizontally; and  
115 then compressed vertically; the baking resulting in exuding the resins is carried out similarly as hereinabove described.

It will be noted that in the substantially flat padding type, the cork flakes are similarly interbonded at spaced areas with one  
120 other or with the flattened thicker cork particles, and with the flat faces of all particles extend substantially in the direction of thickness of the cork padding. Such formation of  
125 flat cork padding, bonded as a whole by interbonding of the cork particles at spaced areas and intervening non-bonded areas and air spaces between the particles, is highly adapted for flat bed laundering machines, 130

such as for pressing cloth, garments and like articles, in which the heat is produced by steam applied at the bottom of and transmitted through the cork padding, and the articles are pressed over the top of the cork padding whereby the vertical positioning and the above referred to nature of inter-bonding of the cork particles enhance the conduction of the steam and heat through the cork padding.

Such vertical positioning of the cork particles interiorly of the flat cork padding facilitates discharge from the padding of steam or moisture from the cloth, garments or like articles generated by the pressing operation, thereby "enlivening" the cork particles, as I have discovered, and minimizing any tendency towards charring.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. An envelope for rolls of mangles and the like and subject to laundering temperatures of 212° F., comprising a mass of inherently flat cork particles bound to one another by resins natural in cork, said envelope extending substantially continuously about the periphery of the roll.

2. An envelope for rolls of mangles and the like and subject to laundering temperatures of 212° F., comprising a mass of inherently flat cork particles bound to one another by resins natural in cork, said envelope extending substantially continuously about the periphery of the roll and substantially continuously from end to end of the roll and means for removably locking the cork envelope to the roll.

3. An envelope for rolls of mangles and the like and subject to laundering temperatures of 212° F., comprising a mass of inherently flat cork particles bound to one another by resins natural in cork, said envelope extending substantially continuously about the periphery of the roll and means distributed on the inner face of the cork envelope for removably locking the same to the roll.

4. A padding for laundering machines and subject to laundering temperatures of 212° F. comprising a mass of inherently flat cork particles bonded to one another under temperature and pressure conditions respectively materially exceeding the maximum temperature and maximum pressure of laundering operations.

5. A padding for laundering machines and subject to laundering temperatures of 212° F. comprising a mass of inherently flat cork particles bonded to one another under temperature and pressure conditions respectively materially exceeding the aforesaid laundering temperature and the maximum pressure

of laundering operations, and possessing resiliency and substantial permanence of dimensions under laundering conditions.

6. A padding for laundering machines and subject to laundering temperatures of 212° F. comprising a mass of cork particles of inherently substantially flat formation bonded to one another under pressure and at a temperature materially exceeding 300° Fahrenheit.

7. A padding for laundering machines and subject to laundering temperatures of 212° F. comprising a mass of cork particles of inherently substantially flat formation and bonded under pressure in overlapping relation to one another by resinous bonding material.

8. A padding for laundering machines and subject to laundering temperatures of 212° F. comprising a mass of cork particles of inherently substantially flat formation bonded to one another to be disposed with their flat faces substantially parallel to one another and under pressure and at a temperature materially exceeding 300° Fahrenheit.

9. A facing for rolls for laundering machines and subject to the temperature of 212° F. comprising a mass of cork particles of inherently substantially flat formation bonded under pressure to one another to be disposed in planes substantially radially and substantially at right angles to the axis of the roll and at a temperature materially exceeding 300° Fahrenheit.

In testimony whereof I have signed this specification this 3rd day of June, 1924.

WILLIAM F. GRUPE.