March 4, 1941. R. W. CUTLER 2,233,995

TEMPLE ROLL FOR LOOMS

Filed Jan. 24, 1940

Fig. 1

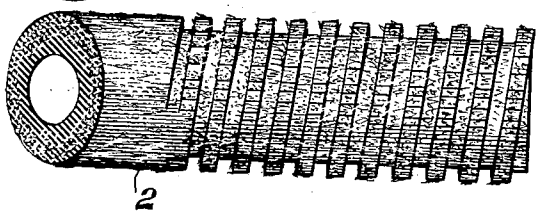
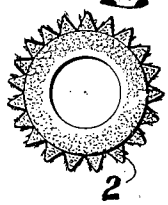


Fig. 2



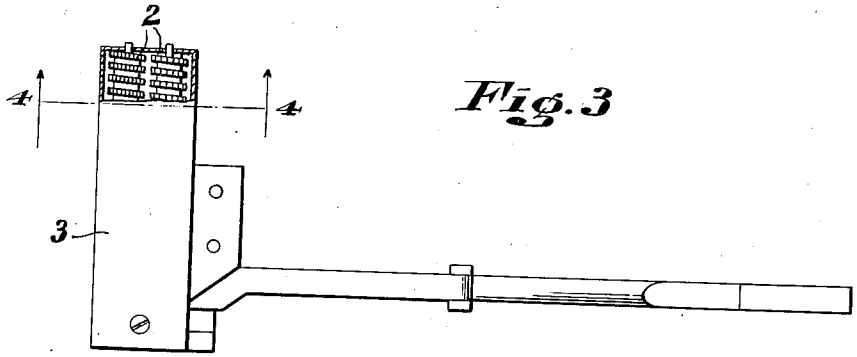
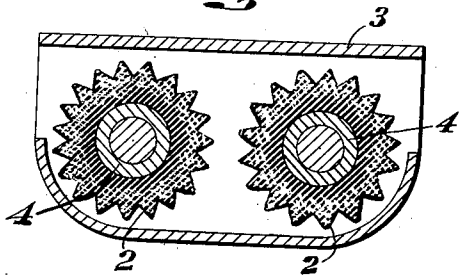


Fig. 3

Fig. 4



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TEMPLE ROLL FOR LOOMS

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8 Claims. (Cl. 139—296)

A common form of temple roll for looms consists of, or includes, an elastic body grooved spirally and mounted on the usual temples in such a manner that rotation of the rolls in contact with the fabric being woven exerts a lateral stretching action on the goods. The body of such a roll is made of some thermoplastic composition, such for example, as Koroseal, rubber, or some of the synthetic rubbers, such as Thiokol, Neoprene, and others. While these rolls have proven very useful, especially on fine goods and delicate fabrics, they do give trouble in failing to hold with the necessary firmness on the smoother surfaced fabrics, such as those made of rayon fiber. The present invention aims to overcome this difficulty and to devise a temple roll of the general type above referred to but which will operate satisfactorily on a wider range of fabrics than those which the prior constructions have been adapted to handle.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawing, and the novel features will be particularly pointed out in the appended claims.

In the drawing,

Figure 1 is a side elevation, partly in section, of a temple roll embodying this invention;

Fig. 2 is an end view of the roll shown in Fig. 1;

Fig. 3 is a plan view, with parts broken away, showing a typical mounting for temple rolls; and

Fig. 4 is a sectional view approximately on the line 4—4, Fig. 3.

Referring first to Figs. 1 and 2, the construction there shown comprises a roll 2 of the usual form, ribbed spirally, and the ribs preferably, although not necessarily, being grooved axially. This body may be made of any suitable composition having the necessary physical characteristics, such as elasticity, toughness, oil resistance, and the like, but it differs from these prior compositions in that there is distributed throughout the body thereof a short fibrous material of such a nature that the surface exposed for operation on the goods being woven is characterized by the presence of a multiplicity of these projecting fibers. Under a reading glass or low powered microscope it presents a hairy appearance. In general, I have obtained the best results by using a short fiber of the nature of flock, and while various kinds of fibers can be used, such as jute and even coarser fibers, or animal hair or bristles, the best results for the finer class of fabrics on which rolls of this type are particularly useful has been produced by using a wool flock. These curly wool fibers have sufficient stiffness to increase very substantially the grip or frictional hold of the temple roll on the web of fabric without injuring the surface of the goods. In some cases the chief difficulty is that the edges of the ribs wear smooth and slip. The fibers prevent this action and enable the roll to maintain its frictional characteristics.

This temple roll may be manufactured by the same methods used heretofore in making up the body of the roll. That is, the materials are compounded and either molded, extruded or shaped in any other suitable way. A common practice is to extrude the plastic material in the form of a tube and to cut the grooves later in a machining operation. In some cases, however, the material is molded to its final grooved form while in a plastic condition.

All of the substances above mentioned are of a rubbery nature and such physical characteristics as hardness, resiliency, and the like, can be readily controlled in the compounding. While the degree of hardness may vary considerably, it is preferable to have the final product of a Shore durometer hardness between 55 and 75, 65 being very satisfactory at ordinary room temperatures and for most purposes.

In this connection the nature of the composition used also should be such as to satisfy the requirements of particular uses. For example, rubber is highly objectionable for many purposes because of its low resistance to attack by oil. This difficulty is readily overcome, however, by using the polymerized vinyl halides or those synthetic rubbers known to be highly resistant to the action of oil, such as Neoprene, Chloroprene, and the like. If the temple roll is to be used on that class of rayons likely to carry a certain amount of acetic acid, then the composition must be resistant to this particular reagent. Koroseal and the other vinyl halide compounds meet this requirement. The proportion of fiber used in the composition should rarely be below 5% or above 15% of the weight of the final compound.

It has been demonstrated in actual practice that temple rolls made in the manner above described have all of the advantages of the prior art rolls while being capable of operating successfully on smooth surfaced fabrics which are not held securely by rolls of the earlier forms. At the same time the expense of manufacture of the rools is not materially increased.

Figs. 3 and 4 show a typical mounting of rolls of this type, two such rolls being supported side

by side in the head 3 of a temple. When so mounted it is customary to insert a ferrule 4 made of wood, wood fiber, or other suitable material, inside the rolls, such a ferrule forming a core which stiffens the entire roll unit.

While I have herein shown and described a typical embodiment of my invention, it will be understood that the invention may be embodied in other forms without departing from the spirit or scope thereof.

Having thus described my invention, what I desire to claim as new is:

1. A temple roll comprising a body of generally cylindrical form but provided with a ribbed peripheral surface and having a hairy elastic surface structure for engagement with the fabric to be operated upon, said body consisting essentially of a tough thermoplastic material selected from the family of compounds consisting of synthetic rubbers and polymerized vinyl halides, and hairy elements embedded therein.

2. A temple roll comprising a body of generally cylindrical form but circumferentially ribbed and having an elastic surface structure composed essentially of a tough resilient thermoplastic material, said surface having a multiplicity of stubby, stiff fibers projecting therefrom and said fibers being independently anchored in the material of said body.

3. A temple roll comprising a body of generally cylindrical form but circumferentially ribbed and having an elastic surface structure composed essentially of a tough resilient thermoplastic material, said surface having a multiplicity of wool fibers projecting therefrom and said fibers being anchored in the roll solely by being embedded in said thermoplastic material.

4. A temple roll comprising a body of generally cylindrical form having an elastic surface structure composed essentially of an oil-proof and waterproof thermoplastic material having a Shore durometer hardness of between 55 and 70, said surface being spirally ribbed and said ribs having closely associated and relatively stiff fibers projecting therefrom and said fibers being anchored in the roll solely by being embedded in said thermoplastic material.

5. A temple roll comprising an elastic body of generally cylindrical form composed essentially of a polymerized vinyl resin, the surface of said body being spirally ribbed, and the surfaces of said ribs having a multiplicity of fibers projecting therefrom, said fibers being independent of each other except for their common anchorage in said body.

6. A temple roll comprising an elastic body of generally cylindrical form, the surface structure of which consists of a tough resilient thermoplastic material selected from the family of compounds consisting of synthetic rubbers and polymerized vinyl halides, ribbed spirally and inert to both oil and acetic acid, said body having a Shore durometer hardness of between 55 and 70, said body containing a substantial proportion of stiff fiber distributed promiscuously throughout the surface structure thereof so that the ends of said fibers project from the surface and give the roll an increased frictional hold on the fabric in engagement with it.

7. A temple roll comprising an elastic body, the surface structure of which consists of a tough resilient thermoplastic material selected from the family of compounds consisting of synthetic rubbers and polymerized vinyl halides, ribbed spirally and inert to both oil and acetic acid, said body including in its composition a sufficient proportion of short fiber distributed therethrough so that a multiplicity of said fibers project from the surface of said body, said fibers being held in place solely by said thermoplastic material.

8. A temple roll comprising a body of generally cylindrical form but provided with a ribbed peripheral surface and having an elastic surface structure composed essentially of a tough resilient thermoplastic material selected from the family of compounds consisting of synthetic rubbers and polymerized vinyl halides, with a multiplicity of relatively stiff fibers dispersed therethrough and projecting from said surface, the proportion of said fibers being between 5% and 15% of the weight of the thermoplastic body in which they are distributed, said fibers being anchored in the roll solely by being embedded in said thermoplastic material.

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