

April 8, 1930.

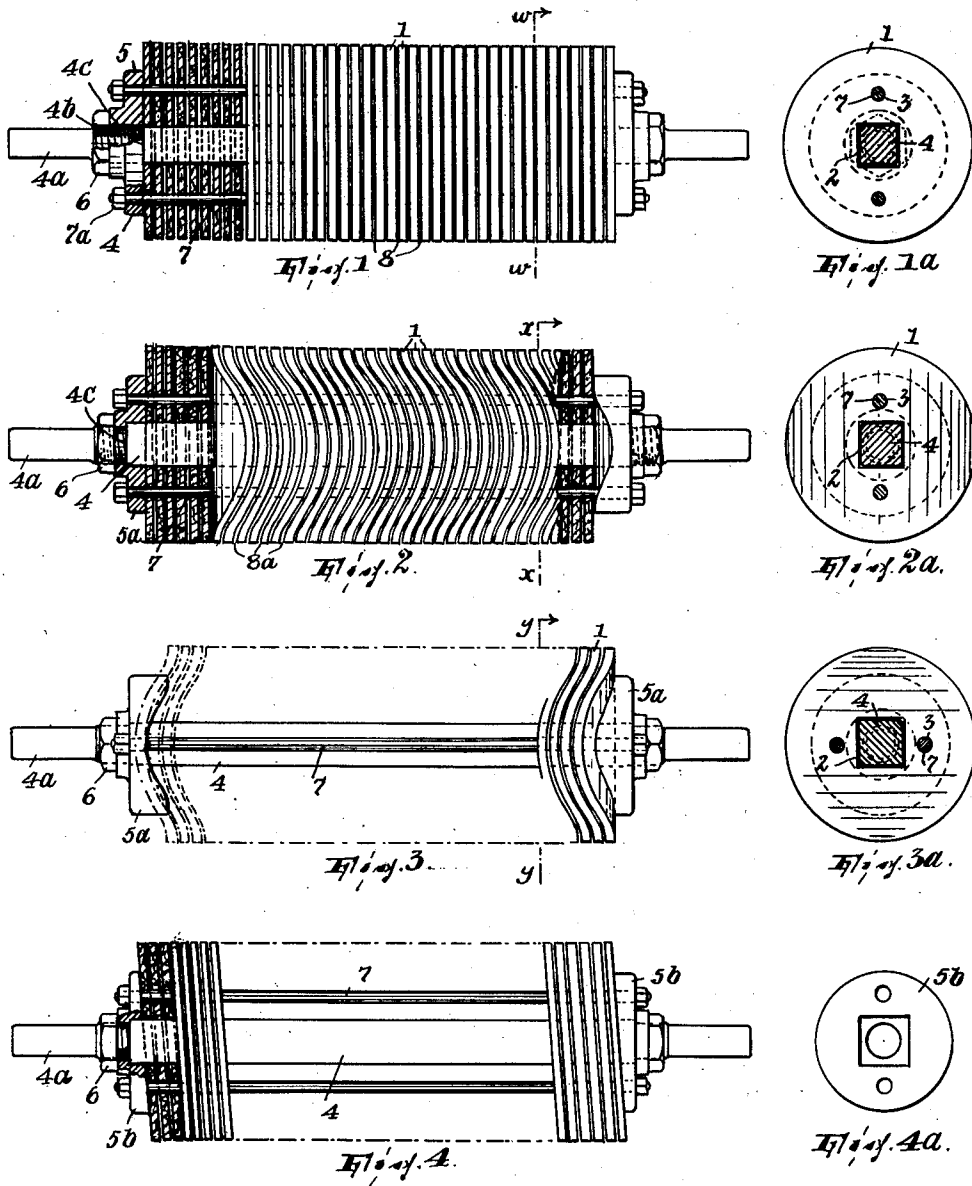
P. EDLICH

1,753,201

FABRIC RUBBING ROLLER

Filed March 29, 1928

2 Sheets-Sheet 1



WITNESS

Wm. Bell

INVENTOR,
Paul Edlich,

BY *John Edward*
ATTORNEY

April 8, 1930.

P. EDLICH
FABRIC RUBBING ROLLER

1,753,201

Filed March 29, 1928

2 Sheets-Sheet 2

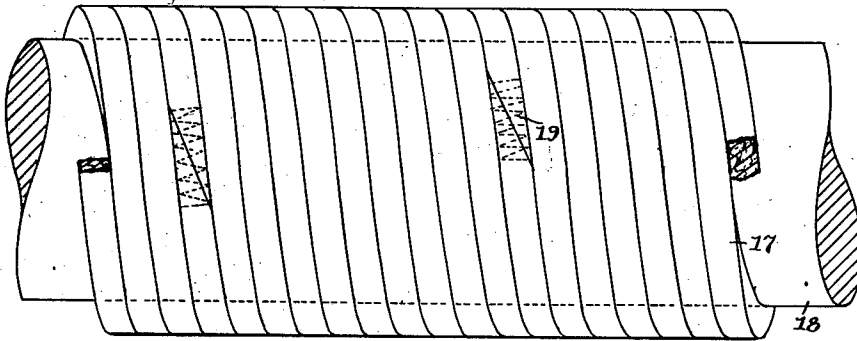


Fig. 8.

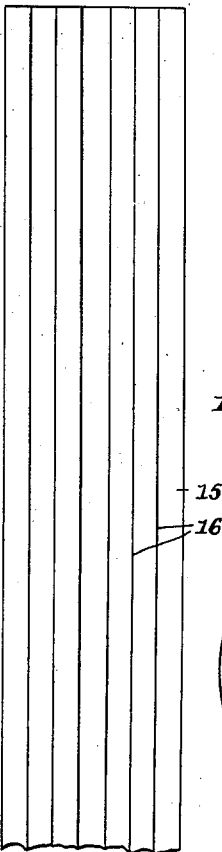


Fig. 9.

WITNESS

Wm. J. Bell.

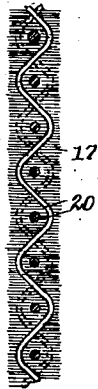


Fig. 10.

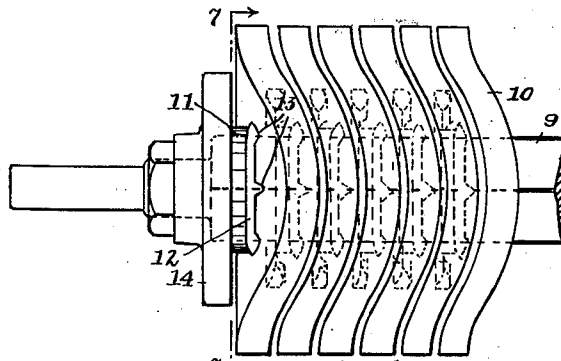


Fig. 5.

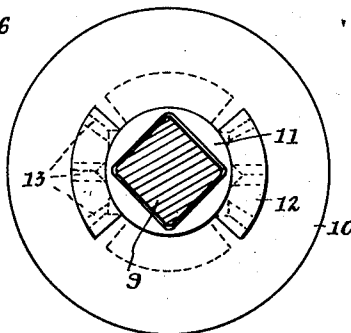


Fig. 7.

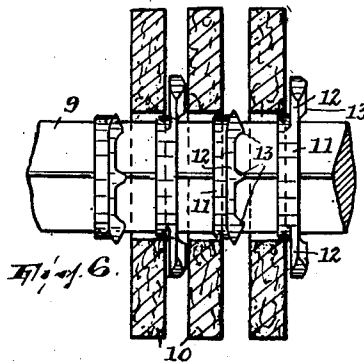


Fig. 6.

INVENTOR,
Paul Edlich,
BY
John Edward,
ATTORNEY.

UNITED STATES PATENT OFFICE

PAUL EDLICH, OF DELAWANNA, NEW JERSEY

FABRIC-RUBBING ROLLER

Application filed March 29, 1928. Serial No. 265,613.

This invention relates to rubbing rollers for fabric rubbing machines, for example of the class set forth in my United States re-issued Patent No. 16,388. The present application is a continuation in part of my abandoned application Serial No. 203,180. Heretofore such rollers have been usually formed by providing a suitable core and a yielding surrounding body, as of felt material, which in any section of the body was a unitary or continuous mass. This construction of roller has been found deficient because if soft enough under pressure to obtain a certain desired spread or area of contact with the fabric the roller frequently stalled, or ceased to rotate and rubbing occurring lengthwise of the axis of the roller was limited if effected at all. The improved roller of this invention is therefore formed with said body non-continuous or interrupted in any longitudinal plane, so that flexion, to wit, of each of its components or leaves, comes into play and each of them acts with a certain degree of independence. This broadly is not new in rollers of this class, but it is new, among other things, to unite the said leaves or components in the manner and by the means herein set forth and so as to produce a fabric rubbing roller which may by pressure obtain a good spread against the fabric and still not be as subject to "stalling" as rollers having their yielding bodies continuous longitudinally and which will effect a good rubbing lengthwise of the roller.

In the drawing,

Fig. 1 is a side elevation, and Fig. 1^a a section on line *w-w* of Fig. 1, of one form of the improved roller;

Fig. 2 is a side elevation, and Fig. 2^a a section on line *x-x* of Fig. 2, of another form of the improved roller;

Fig. 3 is a side elevation of the form shown in Fig. 2, but viewed from a different angle, and Fig. 3^a is a section on line *y-y* of Fig. 3;

Fig. 4 is a side elevation, and Fig. 4^a a view of a detail, of still another form;

Fig. 5 is a fragmentary side elevation of still another form, Fig. 6 being a partly longitudinal section thereof and Fig. 7 a section on line 7-7, Fig. 5;

Fig. 8 is a fragmentary side elevation of still another form;

Fig. 9 shows the material for which the interrupted yielding body in Fig. 8 is formed; and

Fig. 10 is a peripheral view of the strip forming said body in Fig. 8.

As indicated, it is desired that the yielding body of the roller shall be non-continuous or interrupted in any longitudinal plane so that flexion (of each of its resulting leaves or components) may come into play. But the roller should be made up so that while such flexion is permitted the leaves formed should be securely anchored or held against rotation with respect to the core of the roller and the roller as a whole constructed to withstand the distortion and strain incident to the torsion and pressure under which it operates. Therefore,

In Figs. 1 and 1^a, 1 is a series of flexible (as felt) disks arranged coaxially and here perpendicular to the axis of the roller and forming the said leaves or components of what I term the body of the improved roller. Each disk has a non-circular opening 2 and on opposite sides thereof holes 3. A frame or skeleton core is provided on which the disks are strung, being constructed preferably as follows: 4 is a shaft formed non-circular in cross-section and having trunnions 4^a at its ends and threaded portions 4^b inward of the trunnions; 5 a pair of heads screwed onto said portions 4^b and against shoulders at the ends 4^a of its non-circular portion and held by lock-nuts 6; and 7 a pair of rods on both sides of shaft 4 penetrating the heads and having nuts 7^a screwed on their ends and against the heads, the whole frame thus forming a structure whose parts are rigidly related to each other. The disks being strung on the shaft and rods are each held to rotate with this core or frame because their non-circular openings 2 are penetrated by the non-circular shaft, which fairly snugly fits them, and their holes 3 are penetrated by the rods 7 of such core or frame.

A rubbing roller structure comprising a yielding body composed of a longitudinal series of flexible leaves and a rigid frame or core

on which they are mounted so as to be individually held thereby against rotation relatively thereto is believed to be new in this art, when the leaves as a series are not subject to compression operating lengthwise of the roller; for it is noted that, especially if the leaves are more or less spaced, as at 8, thereby they are permitted a superior independence in flexing and a superior, because extended, rubbing over the fabric in a direction lengthwise of the axis of the roller as the result of such flexing under the pressure with which the roller is made to operate, this kind of rubbing being additional to that in the direction of rotation of the roller. In Figs. 1 and 1^a the normal condition of each leaf, i. e., when the roller is not under pressure, is such that as to its whole extent it is coincident with a plane perpendicular to the axis of the roller. But I find that in some cases it is advantageous to have portions of the leaves which go to form a segment of the roller oblique to said axis. Thus,

In Figs. 2-2^a and 3-3^a, where the parts of the core or frame are all the same as before excepting that the heads, 5^a, have their inner faces formed so that one is transversely concave and the other transversely convex, the leaves are all held bent by these heads, though preferably (as before) without the leaves being clamped—note the spaces at 8^a. This type of roller produces a good rubbing lengthwise of the axis of the roller as well as rotatively, and it also opposes less resistance to rotation than the roller shown in Figs. 1 and 1^a.

In Figs. 4-4^a, where the parts of the frame are again all the same as before excepting that the heads 5^b have their inner faces planiform and parallel but oblique to the axis of the roller, the same effect as is produced by the roller shown in Figs. 2-2^a and 3-3^a is in a measure produced, the leaves being here all truly planiform but maintained in oblique relation to said axis by the said faces of the heads 5^b.

In Figs. 2-2^a and 3-3^a, the leaves are all held bent by means acting only at the ends of the series of leaves. But in Figs. 5, 6 and 7 the leaves are held bent by means acting on the individual leaves. On the shaft 9 in alternation with the flexible disks 10 forming the leaves are arranged bend-forming elements here consisting of collars 11 each having a pair of diametrically opposed wings 12 which are formed to project beyond the plane of one face of the collar, as by having lugs 13 thereon; these collars, which have non-circular openings fitting the non-circular shaft, are arranged so that the lugs or equivalent portions 13 on the alternate collars lie in one diameter and those on the remainder in a diameter crossing the first diameter, wherefore when all the leaves or disks 10 and the collars are forced together on the shaft with a certain amount of pressure, and there held,

as by end collars 14 (only one of which is shown in Fig. 5) the lugs hold the leaves bent as shown in Fig. 5 (Fig. 6 showing the parts simply slipped on the shaft without the leaves as yet being bent by the action of the collars). If the lugs are more or less sharp, as shown, they will embed themselves in the soft material of the leaves and support them against turning on the shaft even though the end collars exert but sufficient pressure merely to cause the bending of the leaves.

In Fig. 8 I illustrate a fabric rubbing roller having its yielding body interrupted lengthwise of the roller and consisting of a spirally wound strip of yielding material. For this purpose I cut strips from a sheet of felt 15, as on the lines 16, and having bevelled and butted their ends as shown in Fig. 8, joining such ends by stitching 19, the piece thus produced. In applying this strip material to the shaft 18 one of the faces produced by cutting the strip from the sheet is exposed and goes to form the rubbing periphery of the roller; in other words, the cross-section of the ground 20 (Fig. 10) of the felt is exposed at the periphery of the roller and this I find in certain cases produces a very desirable rubbing action, besides increasing the durability of the rubbing surface of the roller.

Having thus fully described my invention, what I claim is:

1. A fabric rubbing roller comprising a core and a rubbing body consisting of a series of leaves penetrated by and flexible with respect to the core and held to rotate therewith without compression of the series lengthwise of the axis of the roller.

2. A fabric rubbing roller comprising a core and a rubbing body consisting of a series of flexible disk-like leaves penetrated by the core and held to rotate therewith, portions of the leaves which go to form a segment of the periphery of the roller being in permanent oblique relation with respect to the axis of the roller.

3. A fabric rubbing roller comprising a core and a rubbing body consisting of a series of flexible disk-like leaves penetrated by the core and held to rotate therewith, portions of the leaves which go to form diametrically opposed segments of the periphery of the roller being oblique with respect to the axis of the roller.

4. A fabric rubbing roller comprising a core and a rubbing body consisting of a series of leaves penetrated by and flexible with respect to the core and held to rotate therewith without compression of the series lengthwise of the axis of the roller, portions of the leaves which go to form diametrically opposed segments of the periphery of the roller being oblique with respect to the axis of the roller.

5. A fabric rubbing roller comprising a core and a rubbing body consisting of a series

of flexible bent disk-like leaves penetrated by the core and held to rotate therewith, the bends in all the leaves paralleling each other.

5 6. A fabric rubbing roller comprising a core and a rubbing body consisting of a series of bent leaves penetrated by and flexible with respect to the core and held to rotate therewith without compression of the series lengthwise of the axis of the roller.

10 7. A fabric rubbing roller comprising a core and a rubbing body thereon, the core including a pair of elongated rigidly related spaced members extending parallel with the axis of the roller and spaced heads rigidly
15 connected by said members and the body including a series of flexible leaves arranged between the heads and penetrated by said members and held thereby against rotation relatively thereto, the combined thicknesses
20 of the leaves being less than the distance between the heads.

8. A fabric rubbing roller comprising a core and a rubbing body thereon, the core including a shaft arranged axially of the roller,
25 a pair of spaced heads fixed on the shaft, and spaced rods connecting the two heads, and the body including a series of flexible leaves penetrated by the shaft and rods and arranged between said heads, the combined
30 thicknesses of said leaves being less than the distance between the heads.

9. A fabric rubbing roller comprising a core and a rubbing body consisting of a series of rubbing members penetrated by and flexible
35 with respect to the core and held to rotate therewith without compression of the series lengthwise of the axis of the roller.

In testimony whereof I affix my signature.

PAUL EDLICH.

40

45

50

55

60