W. F. LUCKE & J. E. BLAKE.

ROLL FOR LEATHER DRESSING MACHINES.

APPLICATION FILED JUNE 15, 1910.

973,675. **Patented Oct. 25, 1910.**

Fig. 1.

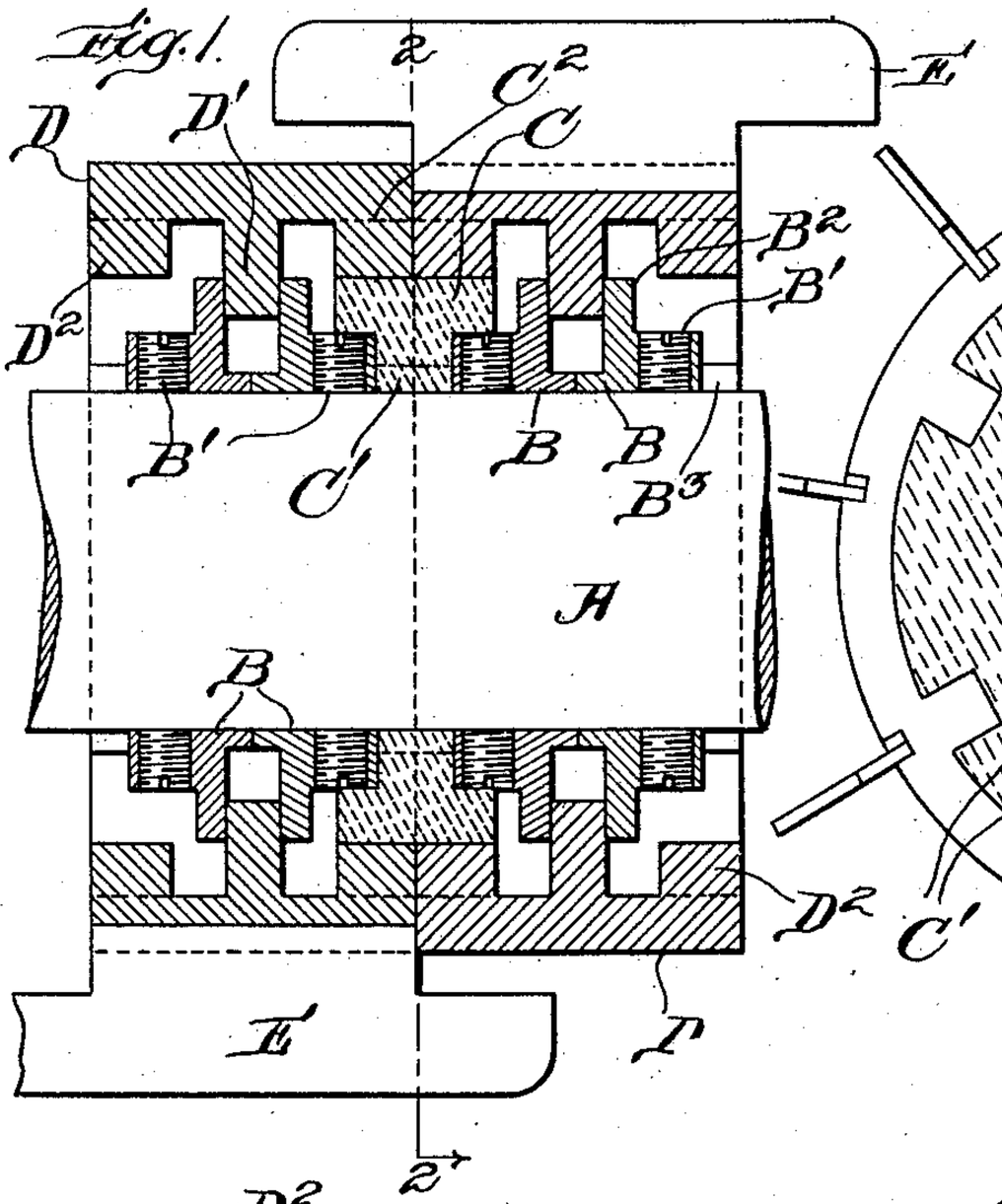


Fig. 2.

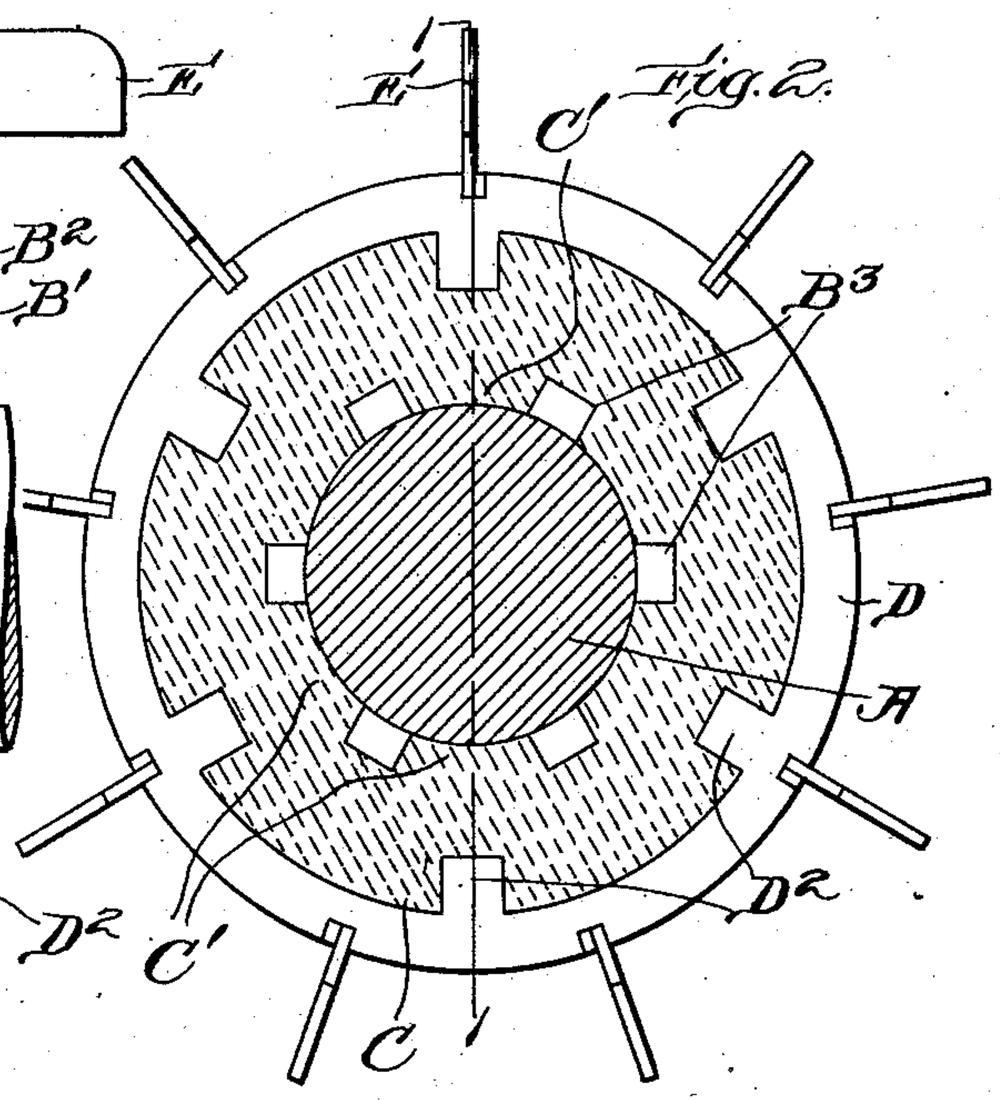


Fig. 3.

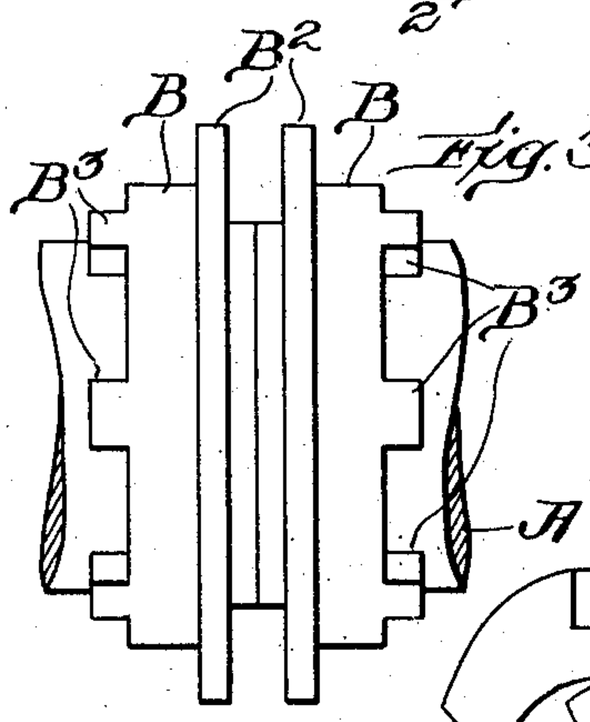


Fig. 4.

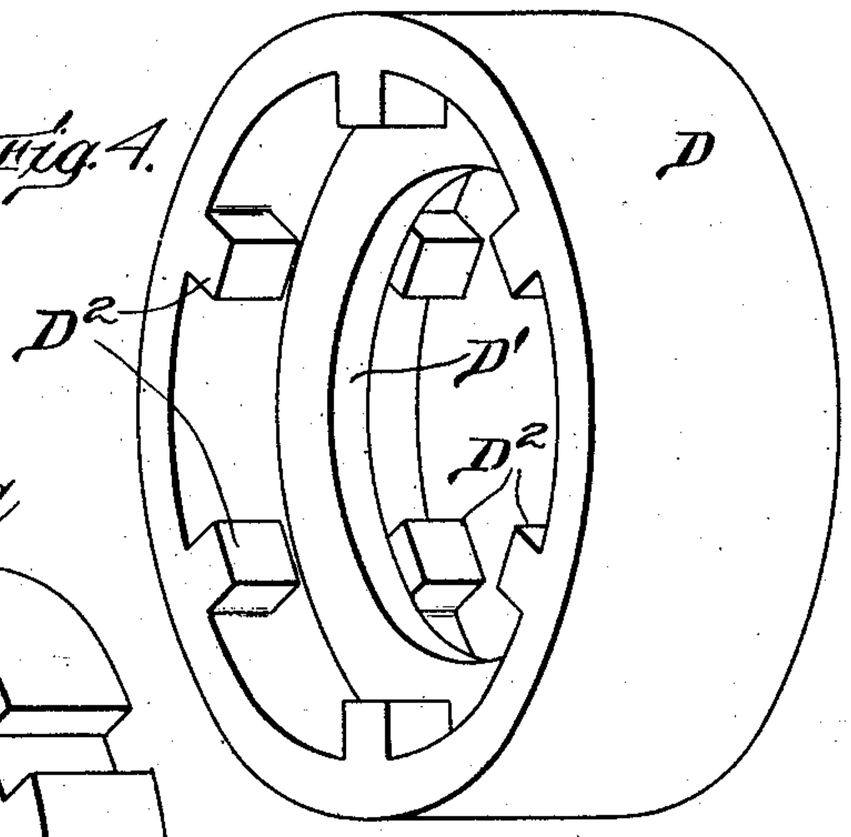
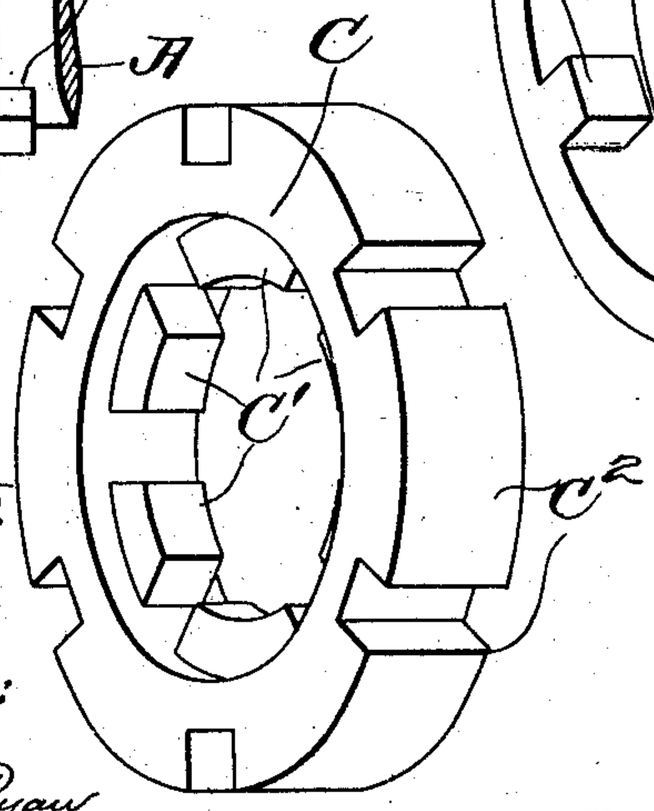


Fig. 5.



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UNITED STATES PATENT OFFICE.

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ROLL FOR LEATHER-DRESSING MACHINES.

973,675. Specification of Letters Patent. Patented Oct. 25, 1910.

Application filed June 15, 1910. Serial No. 566,939.

To all whom it may concern:

Be it known that we, WILLIAM F. LUCKE, a subject of the German Emperor, and JESSE E. BLAKE, a citizen of the United States, and residents, respectively, of Champlain, in the county of Clinton and State of New York, and Beverly, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Rolls for Leather-Dressing Machines, of which the following is a specification.

Our invention relates to the construction of rollers such as are used for example, in sundry forms of leather dressing machinery, and in general to the construction of rollers which are to operate upon material which is not of uniform thickness and where the operation calls for action on the entire surface of such material with effect as uniform as possible over all parts of such surface.

Our invention consists in improvements in the structure of sectional rollers in which adjacent or peripheral rings are joined to and supported by an axial shaft in such manner that while the rings are driven by and rotate with the shaft, they are capable of yielding individually to a limited extent, transversely and rotatively in relation to the shaft and thus of accommodating themselves to variations in thickness of the material on which the roller is operated.

The principle on which concrete examples of our invention work is that of engagement with and support of adjacent or abutting peripheral ring sections by an elastic driver which has a common relationship of support and engagement with adjacent peripheral ring sections, so that the displacement of one such ring section transversely or rotatively, or both, with relation to the driving shaft is in some degree imparted to an adjacent ring section through and by means of the elastic driver common to both. The relationship of interconnection between adjacent peripheral ring sections through an elastic intermediary thus distributes the effect of local displacement and minimizes differences in displacement as between adjacent ring sections and thus distributes the action of the roller uniformly over the surface of the material operated upon, avoiding abrupt contrasts in operative effect as between one peripheral ring and its neighbor.

Usually machines which comprise rollers of the general character indicated provide two coöperative rolls, one of which carries the active operative instruments, such as, for instance, the blades of a leather dressing roller, while the other serves as an abutment or bed roller to hold the material against the active instruments of the other roller. Thus adaptation to accommodate itself locally and automatically to variations in thickness of the material under treatment, may be conferred either upon the structure of the active roller or upon that of the abutting bed roller; consequently while rollers which embody our invention may be equipped with actively operating instruments such as blades or scrapers, they may also be devoid of such instruments. In either case a roller embodying our invention, whether an active roller or a bed roller, is adapted to coöperate with a rigid and unyielding roller having the converse functional characteristic.

In the drawings hereto annexed which illustrate a concrete example of our invention,—Figure 1 is a view in longitudinal section (at line 1—1 of Fig. 2) of a portion of a roller; Fig. 2 is a cross section through Fig. 1 at the line 2—2; Fig. 3 is a side elevation of a portion of the shaft and anchorage collars thereon; Fig. 4 is a view in perspective of one of the peripheral ring sections; and Fig. 5 is a view in perspective of one of the elastic driving and supporting rings.

Referring to Fig. 1, the anchorage collars B are secured to the shaft A by means of set screws B′. Each of these collars is provided with a circumferential flange B^2 and with a series of suitably spaced end lugs B^3 between which lie recesses to form in cooperation with similar lugs upon an adjacent collar the inner sockets for the engagement of elastic driving rings presently to be described. The anchorage collars B are so proportioned that when placed adjacent to and preferably abutting each other upon the shaft A, the flanges B^2 pertaining to adjacent collars provide an annular guiding recess to hold the peripheral ring sections against displacement longitudinally along the shaft A.

The peripheral ring sections D are formed each with an internal flange D′ which lies in the angular recess formed by the collar

flanges B^2, so that each ring D may move transversely or rotatively in relation to the shaft A while held against displacement in a longitudinal direction. On each side of the ring D projections D^2 are formed which extend inwardly, and between which lie the spaces or recesses which, in conjunction with similar recesses in adjacent peripheral rings, form sockets to engage lugs on the outer periphery of an elastic driving ring.

The elastic driving ring is shown at C (Fig. 1) and is preferably composed of a single piece of molded rubber. The anchorage of this driving ring which enables it to turn with and impart motion from the shaft A, lies in the sockets formed by the recesses between the projections B^3 formed on the anchorage collars B; this anchorage is provided with the inwardly projecting lug C′ formed in the body of the elastic driving ring. The outer portion of each elastic driving ring is sufficiently broad to afford ample bearing surface against adjacent ring sections D and inward projections D^2. Outer peripheral lugs C^2 formed on the body of the driving ring C lie between the projections D^2. These lugs are indicated by the dotted lines in Fig. 1 at C^2 but are better shown in perspective view in Fig. 5. Also the structure of the ring section D is shown clearly in perspective in Fig. 4. If the roller constructed by assembling a desired number of ring sections in the above described manner is to be used as a scraping roller as in a putting-out machine, blades such as E (Figs. 1 and 2) may be secured to the rings D, whereas if the roller is to be used as a bed roll, smooth surfaced rings D will suffice.

When, by reason of the irregularities in the thickness of the material operated on, heavier pressure is brought to bear upon one of the ring sections D than upon its neighbors on either side, that section which has to sustain the increased pressure yields and moves transversely and rotatively in relation to the shaft A, being guided and restrained from longitudinal movement by the flange D′ between the flanges B^2. This movement is resisted by the compressible elastic driving rings C which yield not only to permit the enforced movement of the more heavily compressed ring section, but alter their hold to a measurable extent upon the adjacent ring sections which therefore yield and move, though not to so great a degree as the ring section which lies between them. The increased drag of one ring section due to increase of pressure is communicated to adjacent ring sections through the elastic drivers, so that each section of the complete roller contributes to the support of adjacent sections. This mutual interdependence of the several ring sections through an elastic intermediary, which contributes to the support of more than one ring section, enables the roller as a whole to accommodate itself automatically to irregularities in thickness of the material worked upon and to distribute the operative effect evenly over the entire surface of the material without abrupt transitions in pressure or abrasion as between one part and another of the material.

What we claim and desire to secure by Letters Patent is:

1. In a roller, the combination of a shaft, mutually abutting peripheral rings, and elastic driving means, anchored on the shaft, and engaging and supporting adjacent peripheral rings.

2. In a roller, the combination of a shaft, anchorage collars on the shaft, provided with sockets to engage lugs formed on elastic drivers, mutually abutting peripheral rings, provided with sockets to engage lugs on said drivers, and the elastic drivers provided each with inner and outer lugs, the inner lugs anchored in the collar sockets and the outer lugs engaging sockets in two adjacent peripheral rings.

3. In a roller, the combination of a shaft, mutually abutting anchorage collars on the shaft, each collar provided with a flange cooperating with a similar flange on an adjacent collar to form a guide for a peripheral ring, and provided also with recesses cooperating with similar recesses in an adjacent collar to form sockets to engage lugs on an elastic driving ring, mutually abutting peripheral rings, each provided with an internal flange to play in the guide formed by flanges on abutting anchorage collars, and with internal recesses to form sockets to engage lugs on an elastic driving ring, and elastic driving rings, each provided with inner lugs to engage sockets formed by recesses in abutting anchorage collars, and outer lugs on either side to engage sockets in abutting peripheral rings, each elastic driving ring engaging two adjacent peripheral rings.

Signed by me at Champlain, N. Y. this 10th day of June 1910.

WILLIAM F. LUCKE.

Witnesses:
JOHN LINDER,
LOUIS C. LAFONTAINE.

Signed by me at New York city this 9th day of June 1910.

JESSE E. BLAKE.

Witnesses:
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F. S. TIPSON, Jr.