(No Model.)

F. H. UNDERWOOD.

DRIVING RING FOR FRICTIONAL GEARING.

No. 451,985. Patented May 12, 1891.

Fig. 1

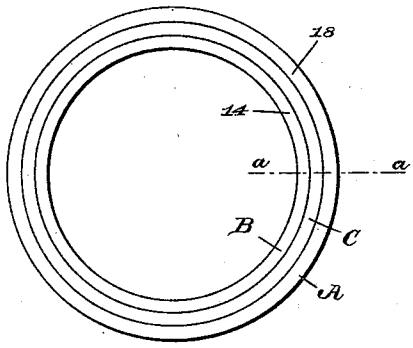


Fig. 2

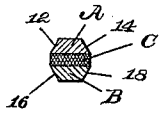


Fig. 3

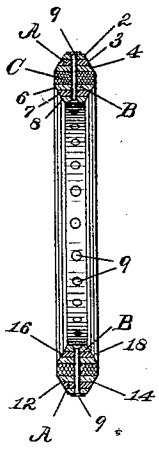


Fig. 4

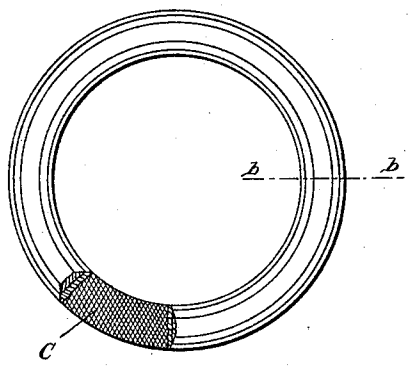


Fig. 5

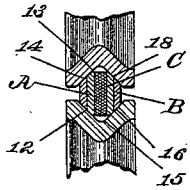


Fig. 6

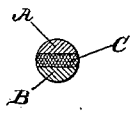
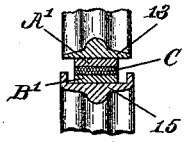


Fig. 7



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UNITED STATES PATENT OFFICE.

FRANK. H. UNDERWOOD, OF TOLLAND, CONNECTICUT.

DRIVING-RING FOR FRICTIONAL GEARING.

SPECIFICATION forming part of Letters Patent No. 451,985, dated May 12, 1891.

Application filed August 5, 1890. Serial No. 361,059. (No model.)

To all whom it may concern:

Be it known that I, FRANK. H. UNDERWOOD, a citizen of the United States, residing at Tolland, in the county of Tolland and State of Connecticut, have invented certain new and useful Improvements in Driving-Rings for Frictional Gearing, of which the following is a specification.

This invention relates to driving-rings for frictional gearing, the object being to furnish a driving-ring adapted to run smoothly at high speeds and having a high degree of efficiency.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side view of a driving-ring embodying my present improvements and having the base-ring of tubular form. Fig. 2 is a cross-section in the line *a a*, Fig. 1, of one side of the driving-ring. Fig. 3 is a view similar to Fig. 2, showing a complete section of the ring in a modified form. Fig. 4 is a side view similar to Fig. 1, and partially broken away, of a driving-ring in which the base-ring is disk-shaped. Fig. 5 is a cross-sectional view in line *b b*, Fig. 4, and illustrates the operation of the driving-ring in connection with the driving and driven wheels. Fig. 6 is a cross-sectional view similar to Fig. 2 of a driving-ring of a rounded form. Fig. 7 is a sectional view illustrating the application of the principal feature of my present improvements to plain driving-rings of tubular form, and whose outer and inner parallel surfaces constitute the frictional driving-faces.

Similar characters designate like parts in all the figures.

The improved driving-ring herein described consists, essentially, of a compressively elastic base-ring, usually formed of suitably-prepared india-rubber or similarly slightly-yielding material, combined with a pair of friction-rims imposed on the opposite sides, respectively, of the base-ring, and having surfaces constituting the frictional driving-faces of the driving-ring. When a driving-ring thus constructed is placed in action between the driving and driven wheels, the elastic base-ring cushions the parts, and thereby accommodates any slight inequalities of the driving-wheels or of the driving-ring itself.

My invention is adapted to be constructed of two principal forms, distinguished by the form of the base-ring, which in the one case is tubular or approximately cylindrical and in the other case is disk-shaped; but it will be understood that conical base-rings may be used in those cases wherein a driving-ring is to be employed for driving-pulleys which are carried by shafts not parallel.

In Figs. 1 and 2 (and also in Figs. 6 and 7) the driving-ring consists of the compressively-elastic base-ring C, of approximately cylindrical form, and having the friction-rim A imposed on the outer side thereof and the friction-rim B imposed on the inner side thereof, said friction-rims being cemented, riveted, or otherwise properly secured to said base-ring. When the driving-ring is to be used between grooved pulleys or wheels, the edges of the friction-rims are beveled to form frictional driving-faces, as 12 and 14 of the rim A and 16 and 18 of the rim B. When the driving-ring is of considerable size, the respective friction-rims A and B may be formed of several thicknesses of leather, suitably prepared woven fabric, or like belt-making material, as indicated in Fig. 3, where the rim A is shown formed of the friction-rings 2, 3, and 4, while the rim B is there shown formed of the oppositely-disposed set of friction-rings 6, 7, and 8, the whole being united by suitable means—as, for instance, by rivets 9—after the manner of riveting belts.

In the form of driving-ring shown in Figs. 4 and 5 the base-ring C is disk-shaped, having its axis substantially parallel with the axis of the driving and driven wheels; so, also, are the friction-rims. In this case the friction-rims A and B are, as in the preceding figures, imposed on the opposite sides, respectively, of the base-ring, and their beveled edges constitute the frictional driving-faces. In this form of driving-ring, however, the beveled faces of each friction-rim constitute driving-faces, one for each wheel, respectively, whereas in the first-described form of driving-ring the friction-rim A contacts with one wheel, while the friction-rim B contacts with the other wheel. While this difference does not materially change the general mode of operation, this construction of the driving-ring is deemed most favorable for use in con-

nection with wheels having a sidewise vibratory movement—a defect very common with large-sized grooved wheels—since the ring is in this case more free to "roll" slightly between the sidewise-moving wheel-rims, and thus better accommodate the varying pressures.

In Fig. 6 is shown a sectional driving-ring of a rounded form and having the compressively-elastic base-ring C and the friction-rims A and B imposed thereon similarly, as is shown in Fig. 2.

In Fig. 7 I have shown the principal feature of my present improvements applied to a plain driving-ring adapted to be used between cylindrical wheel-faces 13 and 15. In this case two flat friction-rims A′ and B′ are imposed on the outer and inner parallel surfaces, respectively, of the compressively-elastic base-ring C, the inner surface of the rim B′ and the outer surface of the rim A′ constituting the frictional driving-faces.

My present improvements by providing in the driving-ring an intermediate or interior layer of compressively-elastic material—such as india-rubber or suitably-prepared gutta-percha or the like—overcomes the rumbling action of the driving and driven wheels which sometimes takes place when the driving-ring is formed wholly of solid layers or rings of leather or like firm material. Driving-rings having this improvement are specially desirable for driving dynamos and other machinery required to be run at high velocities without vibration.

Having thus described my invention, I claim—

1. In a driving-ring for frictional gearing, the combination, with a compressively-elastic base-ring, of a pair of friction-rims imposed on the opposite sides, respectively, of the base-ring.

2. In a driving-ring for frictional gearing, the combination, with a disk-shaped compressively-elastic base-ring, of a pair of friction-rims imposed on the opposite sides, respectively, of the base-ring.

3. In a driving-ring for frictional gearing, the combination, with a compressively-elastic base-ring, of a pair of friction-rims having beveled edges and imposed on the opposite sides, respectively, of the base-ring, said beveled edges constituting frictional driving-faces.

4. In a driving-ring for frictional gearing, the combination, with a disk-shaped compressively-elastic base-ring, of the disk-shaped friction-rims imposed on opposite sides, respectively, of the base-ring, the outer and inner edges of the friction-rims being beveled on the same side thereof to form frictional driving-faces.

5. In a driving-ring for frictional gearing, the combination, with a compressively-elastic base-ring, of a pair of friction-rims imposed on the opposite sides, respectively, of the base-ring, the friction-rims being composed of a series of superimposed friction-rings of successively-decreasing widths, and whose edges constitute frictional driving-faces.

6. In a driving-ring for frictional gearing, the combination, with a base-ring of rubber, of a pair of leather friction-rims imposed on the opposite sides, respectively, of the base-ring.

7. In a driving-ring for frictional gearing, the combination, with a disk-shaped rubber base-ring, of a pair of leather friction-rims imposed on the opposite sides, respectively, of the base-ring.

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