(No Model.)

J. V. BEEKMAN.

FRICTION SURFACE.

No. 429,991. Patented June 10, 1890.

Fig 1

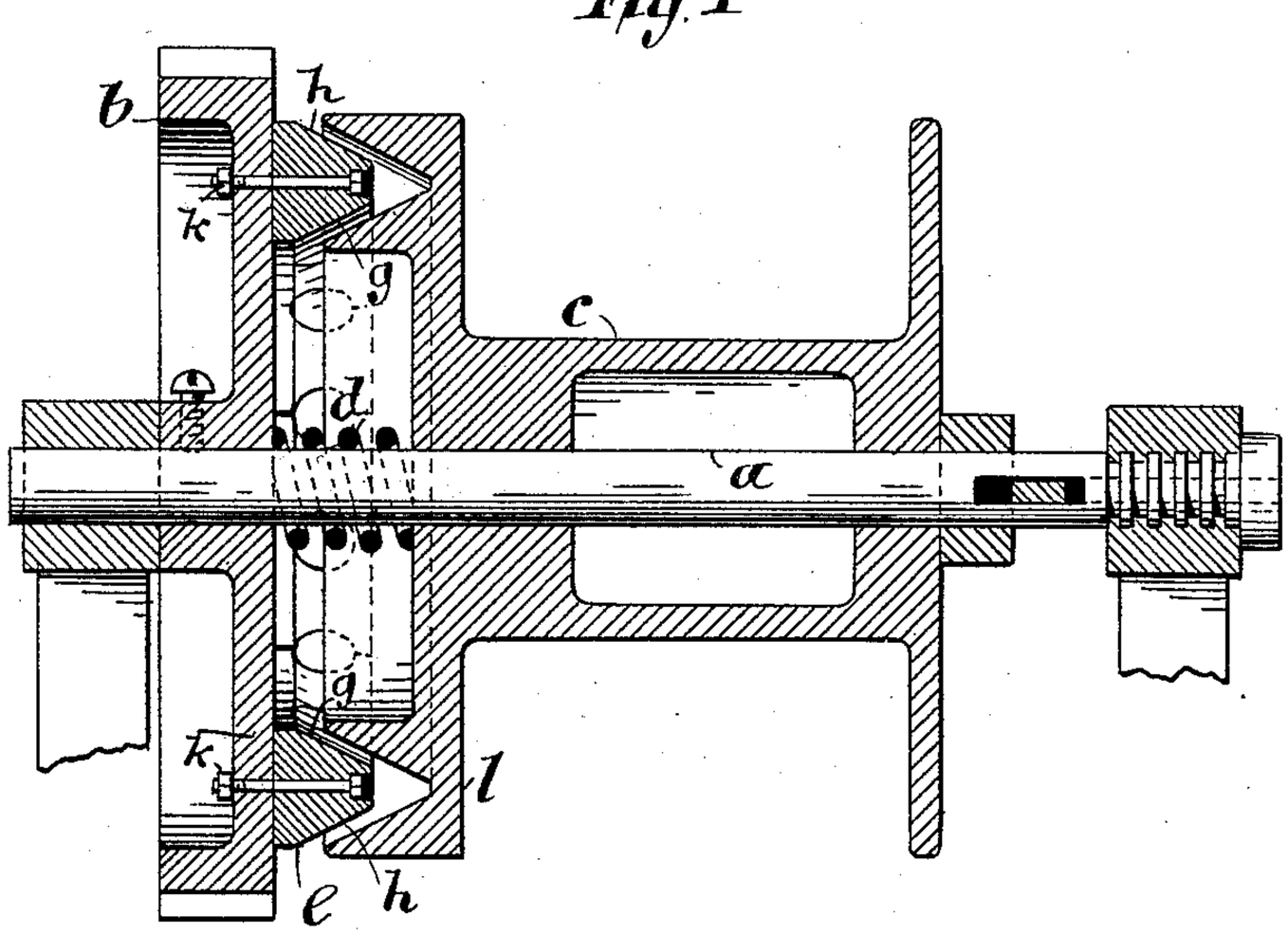


Fig 2

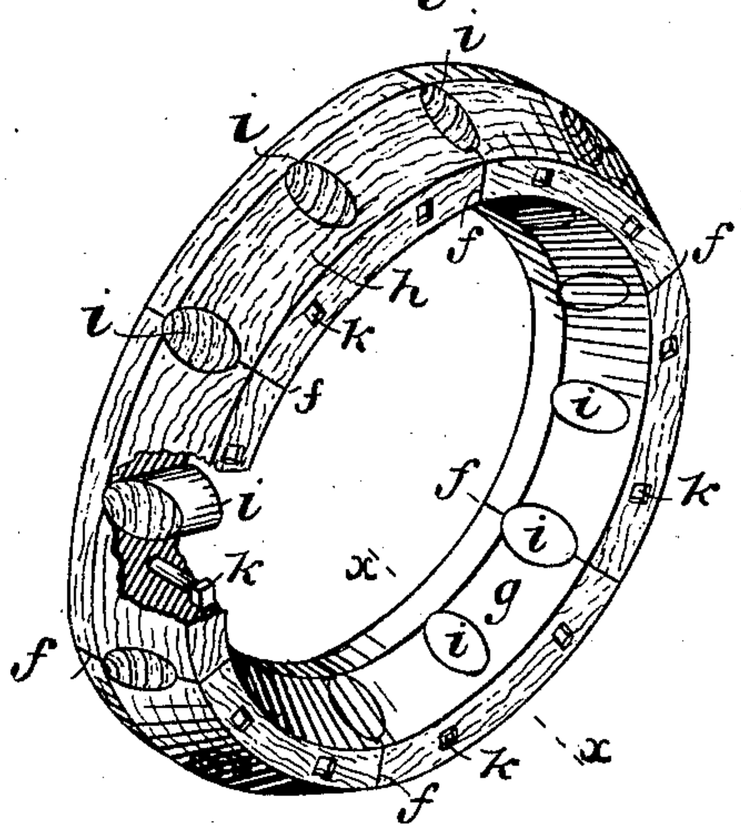
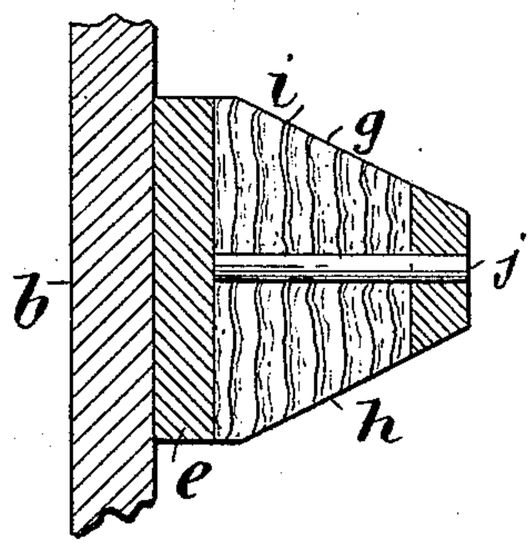


Fig 3



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JOHN V. BEEKMAN, OF BROOKLYN, ASSIGNOR TO THE LIDGERWOOD MANUFACTURING COMPANY, OF NEW YORK, N. Y.

FRICTION-SURFACE.

SPECIFICATION forming part of Letters Patent No. 429,991, dated June 10, 1890.

Application filed February 24, 1890. Serial No. 341,555. (No model.)

To all whom it may concern:

Be it known that I, JOHN V. BEEKMAN, of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Friction-Surfaces, specially adapted for friction-drums, of which the following is a specification.

Figure 1 shows a longitudinal section of a friction-drum containing my invention. Fig. 2 is an isometric view of the wooden ring for the friction-surface detached, the same being partly broken away to more clearly show its construction. Fig. 3 shows a cross-section of the wooden ring through the line *x x* of Fig. 2.

a is the drum-shaft, mounted in suitable bearings.

b is a spur-wheel made fast on the shaft, and by which the shaft is continuously driven.

c is a drum loose on the shaft and capable of a reciprocating movement longitudinally on the shaft. Any well-known means may be employed for thrusting the drum toward the spur-wheel, and a coil-spring *d* may be employed for thrusting the drum back from the spur-wheel.

My invention relates particularly to the construction of the friction-surfaces with which the drum engages when thrust toward the spur-wheel and from which it disengages when allowed to retreat from the spur-wheel. Heretofore it has been customary to construct these friction-surfaces of wood, sometimes with the grain running radially and at other times with the grain running tangentially; sometimes with a single beveled or a single conical friction-surface and at other times with a double-beveled or V-shaped friction-surface. I have discovered, however, that by constructing a friction-surface of wood part of which has its grain running radially, or nearly so, and part of which has its grain running tangentially, or nearly so, and thereby securing a friction-surface composed partly of the ends of the grain and partly of the sides of the grain, I can secure greater efficiency and combined holding-power and resistance to wear than has heretofore been accomplished. To this end I prefer to construct the friction-surface as shown in Figs. 2 and 3 of the drawings.

e is a ring of wood, made up of sections, as indicated by the lines lettered *f*, the cross-section of which is shown in Fig. 3. The grain of each section of this wood runs tangentially, or nearly so, to this ring. The ring is turned off so as to form friction-surfaces *g* and *h*, which are made true circles by being finished after the wood has been placed in position on the spur-wheel. Radial holes are bored through this ring from one friction-surface to the other, and in these holes are placed the plugs or pins, of any shape desired, which are lettered *i*. The grain of the wood in these plugs runs radially. If need be, for holding the plugs in place, dowel-pins may be inserted, as shown at *j*, Fig. 3. These plugs are placed in position before the final turning down of the friction-surfaces occurs to finish them, so that the friction-surfaces are of uniform shape, but present the grain of the wood running in two directions—that is to say, the grain of the plugs runs radially, so that the wear is received on the end of the grain, and the grain of the wooden ring *e* runs tangentially, so that the wear is received on the side of the grain. The end of the grain presents the greatest resistance to wearing, but the side of the grain affords the greatest holding capacity, and by presenting both the end and the side to the wear I obtain a combination of holding-power and the resistance to wear of the highest efficiency.

The wooden ring shown in Fig. 3 is applied to the face of the spur-wheel or the flange of the drum, as the case may be, and is held in position by the bolts running parallel to the shaft, which are lettered *k*. These bolts are shown in Fig. 1 as extending entirely through the spur-wheel, so as to be accessible from the outside. This arrangement is a great convenience for their adjustment or removal. The flange opposing this ring thus placed (as the flange *l*, Fig. 1) is turned on its face so as to present a metallic friction-surface of corresponding bevel with that presented by the surface of the wooden ring.

I do not desire to limit the application of my invention to the V-shaped form of friction-surface shown, nor otherwise to the form or details of construction, since I am well

aware that the invention may be practiced in a great variety of forms.

I claim—

1. In a friction device containing two friction-surfaces adapted to engage and disengage with each other, in combination with the piece containing one of the friction-surfaces, the second friction-surface composed of wooden sections arranged to present a circular surface, the several sections having their grain tangential, or nearly so, to the circle, and being intersected by separate pieces of wood having their grain radial, or nearly so, to the circle.

2. In combination, a shaft, a friction-ring the acting-surface of which is inclined to the axis of the shaft, a wooden friction-surface also inclined to the axis of the shaft, and suitable devices for causing the engagement of said friction-surface, the said wooden friction-surface being composed of separate pieces of wood the grains of which run, respectively, tangentially, or nearly so, and radially, or nearly so, substantially as described.

3. In a device for controlling the transmission of power by friction, in combination, the shaft, a disk mounted upon the shaft, a circular friction-surface composed of wood, some of the grains of which run tangentially, or nearly so, a second friction-surface, and suitable devices for causing the two friction-surfaces to make and break contact by moving to and from one another, substantially as described.

4. A circular wooden friction-surface composed of sections having the grain running tangentially, or nearly so, said sections having plugs embedded in them with the grain running radially, or nearly so, substantially as described.

5. In a friction-drum, in combination, the shaft, the spur-wheel fast to the shaft, a wooden friction-ring secured to the spur-wheel, a drum loose on the shaft, provided with a flange adapted to engage with said ring, and a series of plugs embedded in said wooden friction-ring, substantially as described.

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