A. M. Cushing,

Sheave.

No. 109184. Patented Nov 15. 1870.

Fig 1.

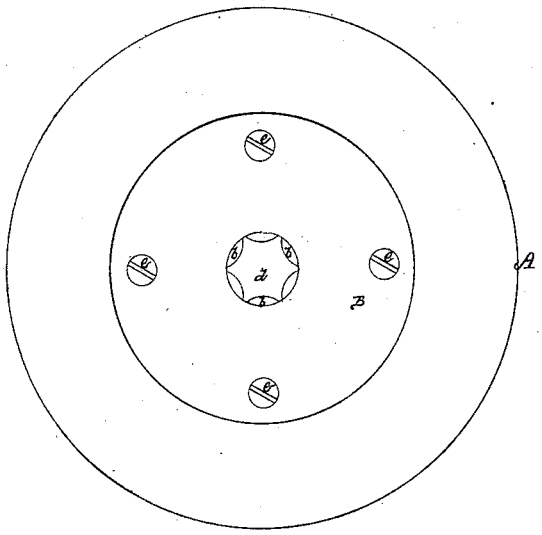


Fig 2.

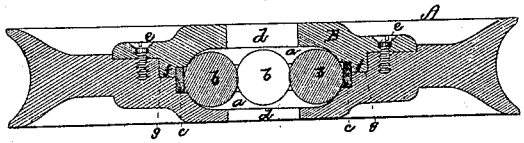
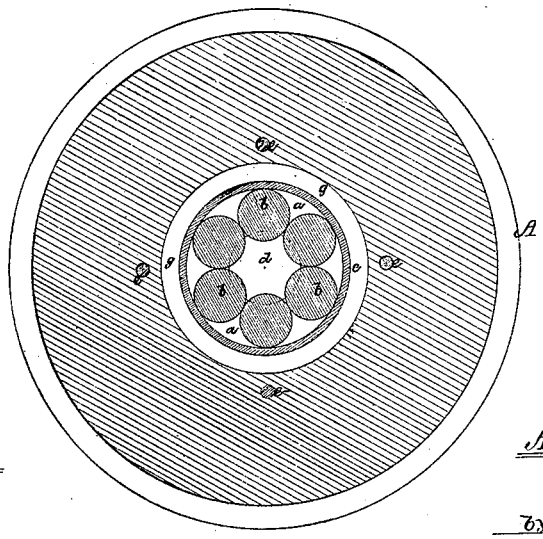


Fig 3.



Witnesses.

S. N. Piper

J. R. Snow

A. M. Cushing.

by his attorney:

R. H. Eddy

United States Patent Office.

ALVIN MATTHEW CUSHING, OF LYNN, MASSACHUSETTS.

Letters Patent No. 109,184, dated November 15, 1870.

IMPROVEMENT IN SHEAVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, ALVIN MATTHEW CUSHING, of Lynn, of the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Sheaves, or wheels provided with friction-rollers or balls; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a side view;

Figure 2, a longitudinal section; and

Figure 3, a transverse section of a sheave as containing my invention.

The said sheave, shown at A, has arranged within it concentrically a cylindrical chamber, *a*, for containing a series of friction-rollers or spheres, *b b b*, and also a steel ring, *c*.

The said ring encompassing the balls constitutes a bearing for them to run against, and is separate from the body of the sheave.

The ring is to fit closely to the periphery of the cavity or chamber *a* for its reception.

The bottom of the chamber *a* has an opening, *d*, to receive the spindle or arbor on which the sheave is to be supported when in use.

The chamber, at its top or opposite end, is open and furnished with a cap-plate, B, the ball or friction-wheel chamber being partially formed in the cap-plate or not.

This cap-plate is secured to the sheave-body by screws *e e e*, or other proper fastenings, and has an annular projection, *f*, extended from its rear side to enter a corresponding socket or groove, *g*, going around the steel ring, but having a depth less than that of the said ring, the whole being as represented in the drawing.

In the common way of applying a series of friction-rollers or balls to a pulley-sheave or a wheel, such friction-devices have been allowed to run directly against the circumference of the chamber for their reception, and when such has been made of cast-iron, and even when so made and chill-hardened, it would be liable to soon become injuriously worn by the balls or rollers, and frequently cause them to stop and not perform their proper functions.

By having a separate bearing-ring of steel placed and fitted closely in the cast-metal chamber, in manner as represented, such ring, when worn, may easily be removed, and another or fresh one be substituted, without the necessity of abandoning the sheave-body.

Furthermore, the annular cavity about the ring enables such ring, after having been driven down into its chamber, to be easily taken hold of by nippers when it may be desirable to disengage the ring from the chamber.

As the ring by use is liable to be expanded more or less, it will generally so firmly fit the chamber as to render it difficult of removal therefrom without the accompaniment of the encircling cavity to aid in effecting such.

Furthermore, the said cavity and the projection *f*, from the cap or cover, serve to keep the cap or cover in place, and prevent strains on it from breaking or starting its confining screws, the projection also answering as a support for the ring.

I claim as of my invention in the above-described sheave the following; that is to say—

The arrangement and combination of the annular channel or groove *g* and projection *f*, with the cap-plate B, the ring *c*, the series of rollers or balls *b*, and their chamber *a*, made in the body A of the sheave, as set forth.

ALVIN MATTHEW CUSHING.

Witnesses:

R. H. EDDY,

J. R. SNOW.