

(No Model.)

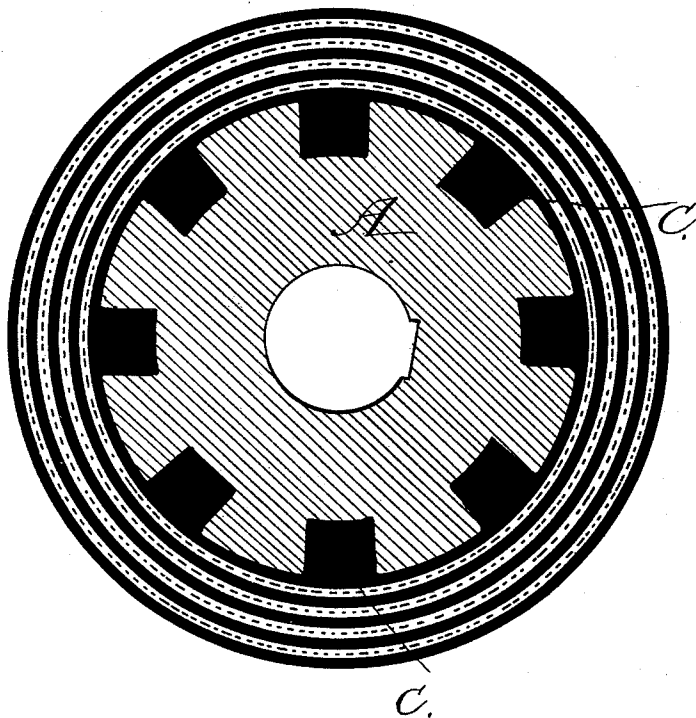
2 Sheets—Sheet 1.

W. J. GORHAM & M. A. GRAHAM.
PULLEY.

No. 414,307.

Patented Nov. 5, 1889.

FIG. 1.



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(No Model.)

2 Sheets—Sheet 2.

W. J. GORHAM & M. A. GRAHAM.
PULLEY.

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Fig. 2.

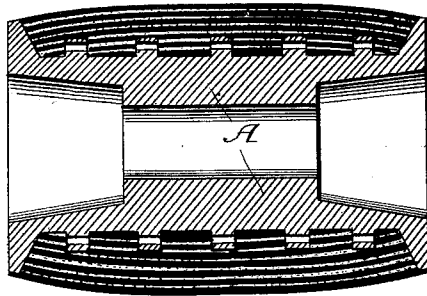
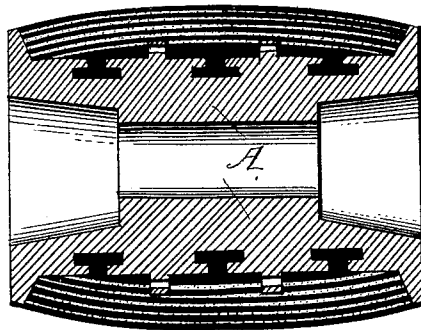


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM J. GORHAM AND MARCELLUS A. GRAHAM, OF SAN FRANCISCO,
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PULLEY.

SPECIFICATION forming part of Letters Patent No. 414,307, dated November 5, 1889.

Application filed February 11, 1889. Serial No. 299,502. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM J. GORHAM and MARCELLUS A. GRAHAM, of the city and county of San Francisco, State of California, have invented an Improvement in Pulleys; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to an improved construction for pulleys. It is more especially adapted for use upon small pulleys which receive a belt from a much larger one for the purpose of producing high speed, such as are used upon planing-machines, generators for electric-lighting purposes, and other machinery.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is a transverse section through the center of the pulley. Figs. 2 and 3 show modifications of the core-surface.

In the use of very small pulleys it is almost impossible to prevent the belt from slipping and causing irregular work.

In our invention the pulley is composed mainly of what is known as "fibrous stock," which forms the exterior surface and body, and in connection therewith we employ a spider or core, of iron or other metal, which forms a center, and a peculiar means for uniting the two together.

A is the "core" or "spider," as we term it, which is made of cast-iron or other suitable material. Around the surface the core is formed of alternate channels and elevations, which may extend from end to end, or, which is preferred, it may have plain grooved or dovetailed channels around the circumference, as in Figs. 2 and 3. The adhesion is increased in the case of plain ridges and grooves by making holes through the elevated ridges, so that the plastic material may pass through, and, uniting with that within the channels, it forms a lock, which will effectually prevent the loosening of the body from the core. This core forms a hub, which is bored through with a hole of the proper size to fit the shaft for which it is designed, and with a keyway or other usual means for securing it thereto.

In finishing the pulley we take a compound, which is known to the trade as "fibrous

stock," and which consists, approximately, of shoddy or old rubber, boot, shoe, and coat material ground up, iron filings, litharge, coal-tar, and a small percentage of rubber, with sufficient sulphur to properly vulcanize the mass. This material is prepared in sheets, and is known to the trade. We make no claim upon the particular compound. Strips of this material are first laid into the grooves or channels C, so as to fill them up approximately to the level of the elevations on the surface of the core. A sheet of the material is then cut so as to just wrap around the surface of the core, the edges meeting, and a sheet of cloth, canvas, or other suitable fibrous material or wire-cloth is then wrapped around this first layer of the fibrous stock. Another layer of the fibrous stock is then wrapped around the canvas or other intermediate coating, and this is again followed by another layer of canvas, and so on until the space between the flanges is built up to a proper height, the outer coating being composed of the fibrous stock. The material being thus built up, the whole core and outer casing are placed within a mold, within which it is closely clamped, the proper crown being given to the surface which is to form the pulley-surface when finished. The whole is then placed in a vulcanizer and vulcanized in the usual manner of vulcanizing rubber fabric, and the material will permeate through the intermediate layers of canvas or other material, so as to form a homogeneous body, and it will be firmly secured to the metal core both by reason of the channels and by reason of the vulcanizing, which causes it to adhere strongly to the iron.

The pulley thus built presents a surface which will hold the belt so strongly that it will slip upon a large driving-pulley sooner than it will upon this small pulley. The corrugated or channeled surface of the core prevents the material from crawling or working loose, as is the case where pulley-covers are placed upon the ordinary smooth pulleys.

We are aware that pulley-covers of various materials have been placed upon ordinary iron pulleys; and we are also aware that strips of wood have been inserted into depressions in the faces of such pulleys for the purpose of

nailing the leather or other coverings to said strips to retain them in place. We do not claim any such device.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A pulley consisting of a metal core having its periphery formed with alternate channels and elevations and having flanges at the ends, and a body composed of alternating fibrous stock and sheets of flexible material fitted upon the core and vulcanized thereto, substantially as described.

2. A pulley consisting of a metal core having grooved or dovetailed channels around its circumference, and alternating elevations and a body fitted to said core and consisting of alternating fibrous stock and sheets of flexible material, substantially as described.

In witness whereof we have hereunto set our hands.

WILLIAM J. GORHAM.
MARCELLUS A. GRAHAM.

Witnesses:
S. H. NOURSE,
H. C. LEE.