

No. 689,662.

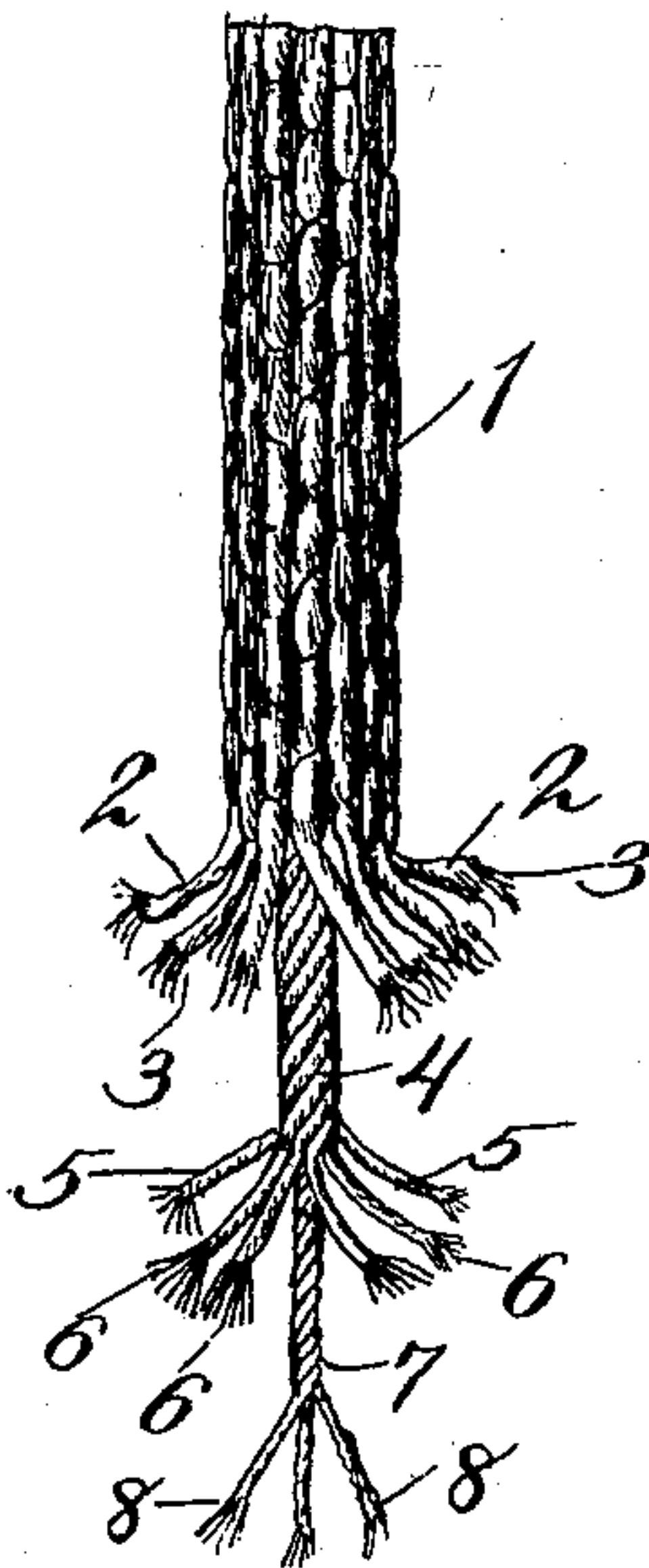
Patented Dec. 24, 1901.

W. A. TUCKER.  
PULL CORD.

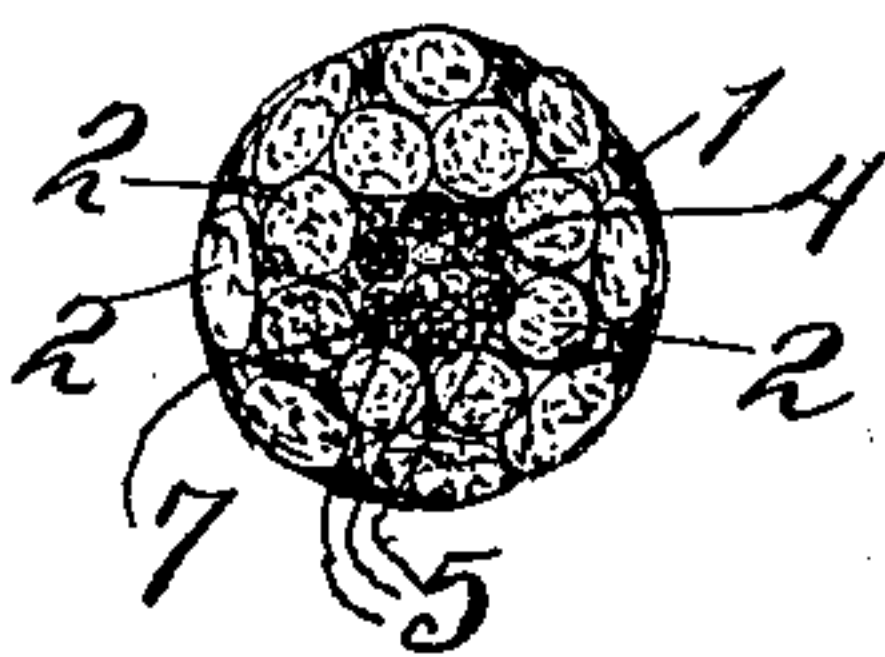
(Application filed Aug. 1, 1901.)

(No Model.)

*Fig. 1,*



*Fig. 2,*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM A. TUCKER, OF NEW YORK, N. Y., ASSIGNOR TO TUCKER & CARTER ROPE COMPANY, A CORPORATION OF NEW YORK.

## PULL-CORD.

SPECIFICATION forming part of Letters Patent No. 689,662, dated December 24, 1901.

Application filed August 1, 1901. Serial No. 70,474. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. TUCKER, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Pull-Cords, of which the following is a specification.

This invention relates to improvements in pull-cords.

The invention seeks to provide a non-stretchable pull-cord of maximum strength and maximum flexibility at comparatively low cost and which shall be adapted to be used as a bell-cord, as belting for transmission of power, for operating steering-gear of small vessels, and for other purposes where non-stretchability, flexibility, and strength are required in a pull-cord.

The invention consists of a pull-cord having a flexible steel core and a flexible exterior surrounding the core made of strands of fibrous material—such as cotton, jute, hemp, &c.—braided, twisted, or woven together. In the best form of the invention the core has a central strand of fibrous material which is sheathed within a plurality of steel strands. The steel strands are generally twisted together, and each such strand preferably consists of a plurality of fine steel wires twisted together to form a strand.

In the accompanying drawings, forming part of this specification, I have shown one of the various embodiments of the invention, like reference-numerals referring to the same parts in both figures of the drawings.

Figure 1 is a side elevation showing the improved pull-cord, the strands of the exterior being cut off to expose the core and all the strands of the cord being frayed and spread out. Fig. 2 is a transverse section of the cord.

Referring now more particularly to the precise structure shown in the drawings, 1 is the exterior of the cord, composed of some seventeen separate strands 2 braided together, each strand being composed of a number of threads 3 twisted together to form a strand 2. The core 4 is composed of a plurality of separate steel strands 5 twisted together, each strand 5 being composed of a plurality of separate

fine steel wires 6 twisted together to form a strand 5. The core also preferably has, as shown, a central strand 7, sheathed within the core 4 and made of fibrous material. This central strand 7, as shown in the drawings, is preferably made of a plurality of separate smaller component strands 8 twisted together, each such strand 8 being made of a number of threads twisted together.

Of course various modifications may be made in the structure of the cord without departing from the scope of the invention. For example, the strands composing the exterior and core may be varied in number, and the central strand 7 may in some cases be omitted. Again, the strands 5 of the core may be braided or woven together instead of being twisted together. The same is true of the strands 8.

By means of this invention a pull-cord is provided of superior quality and efficiency.

Pull-cords as heretofore made are subject to a considerable degree of extensibility or stretch under the strains incident to use, and this is a recognized defect requiring frequent adjustment of the cord to maintain its efficiency. The problem of overcoming this defect and of maintaining at the same time the requisite flexibility is successfully solved by this invention. At the same time the strength of the cord is greatly increased without increasing its size.

What I desire to claim and secure by Letters Patent is—

1. A non-stretchable, flexible pull-cord including in its structure a flexible core made of a central strand of fibrous material with a sheathing therefor made of separate steel strands twisted together, each strand of which consists of a plurality of fine wires twisted together; and a flexible exterior made of braided, twisted, or woven strands of fibrous material.

2. A non-stretchable, flexible pull-cord including in its structure a flexible core made of a central strand of fibrous material with a sheathing therefor made of separate closely-associated steel strands; and a flexible exterior made of braided, twisted, or woven

strandsof fibrous material, said central strand  
consisting of a plurality of threads twisted  
together, and said sheathing consisting of steel  
strands twisted together, each steel strand  
5 consisting of a plurality of fine wires twisted  
together.

In testimony whereof I have signed my

name to this specification in the presence  
of two subscribing witnesses.

WILLIAM A. TUCKER.

Witnesses:

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ELMER E. COOLEY.