No. 631,957. Patented Aug. 29, 1899.

S. E. DIESCHER.

PULLEY AND SHAFT COUPLING.

(Application filed Mar. 9, 1899.)

(No Model.) 4 Sheets—Sheet 1.

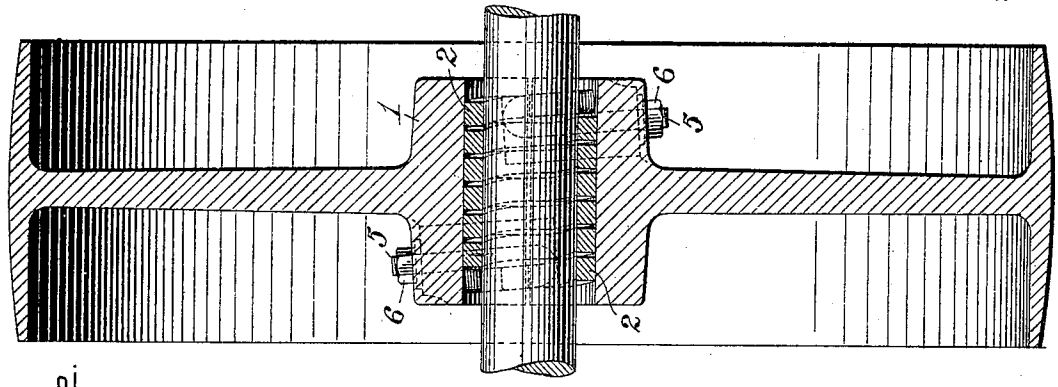


FIG. 2.

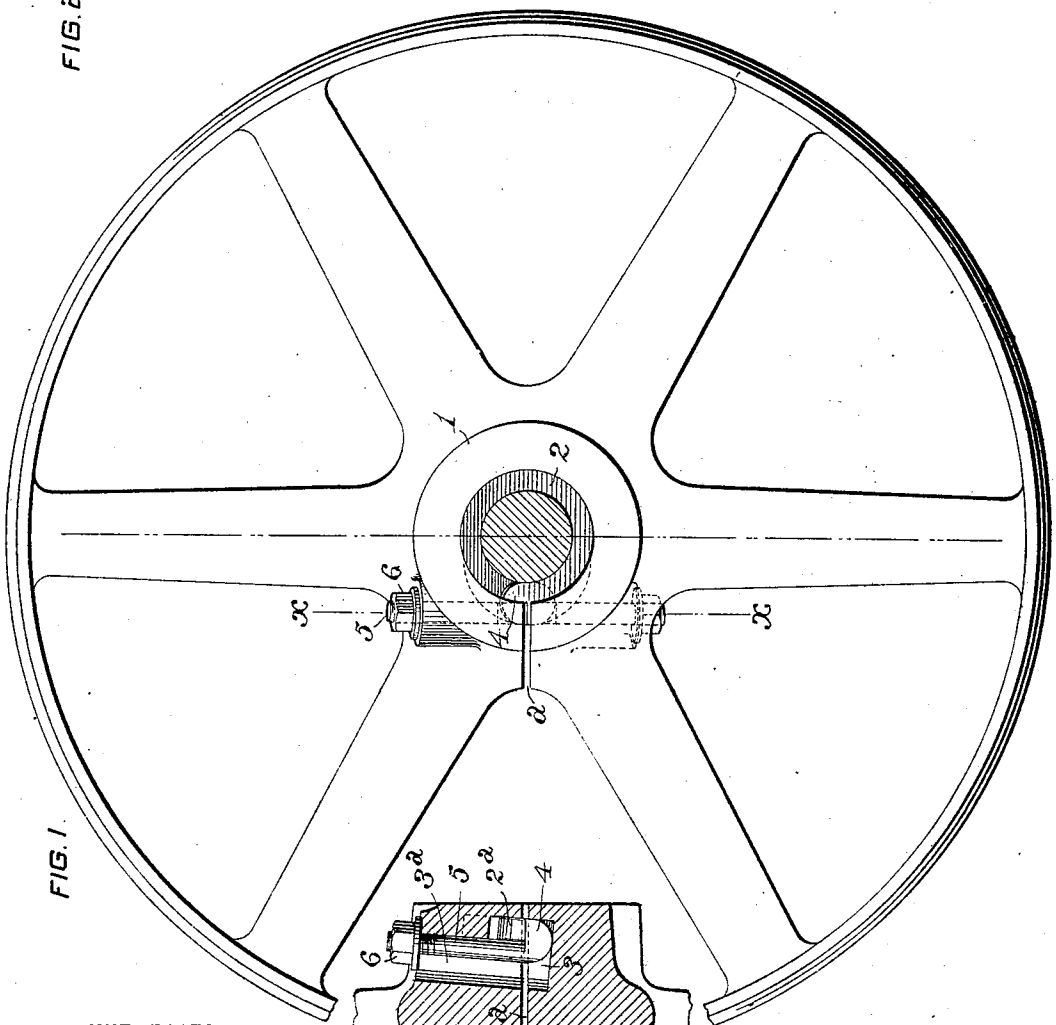


FIG. 1.

FIG. 2a.

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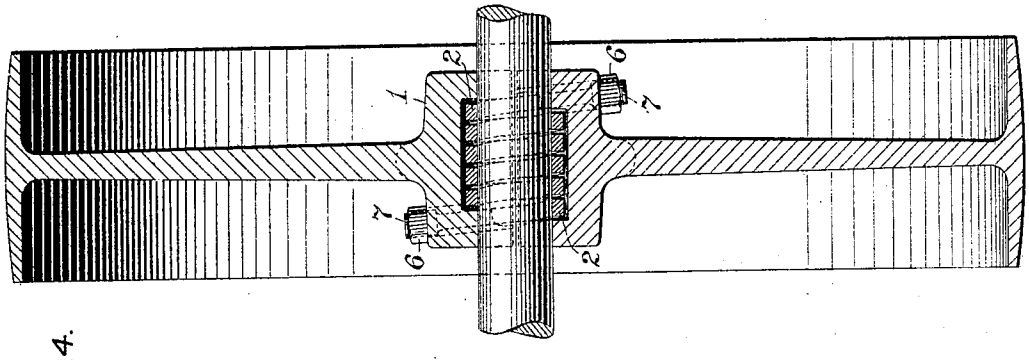


FIG. 4.

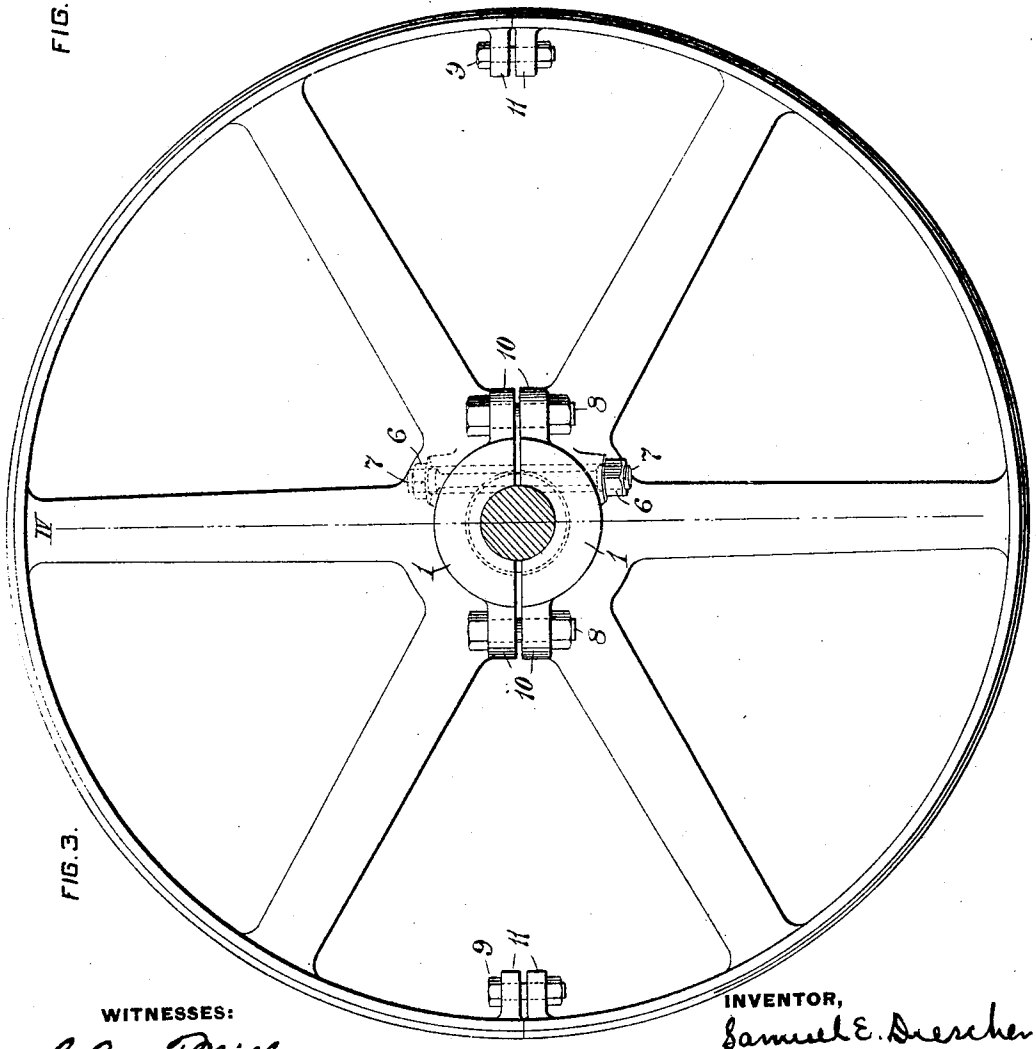


FIG. 3.

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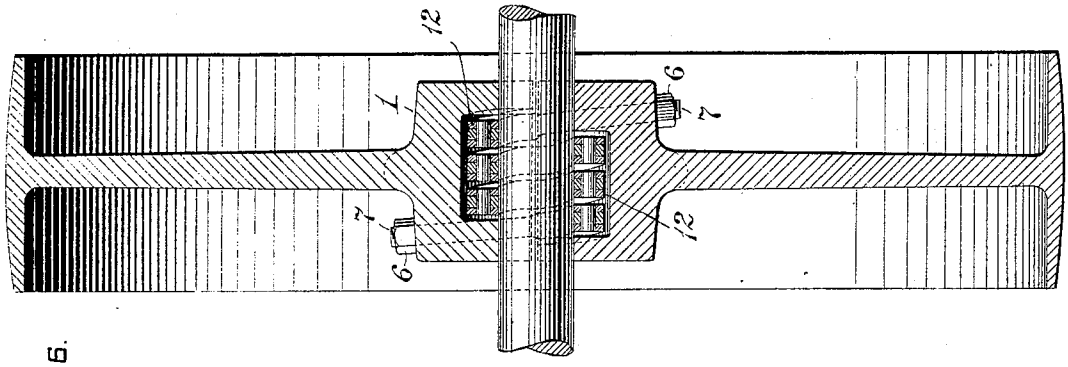


FIG. 6.

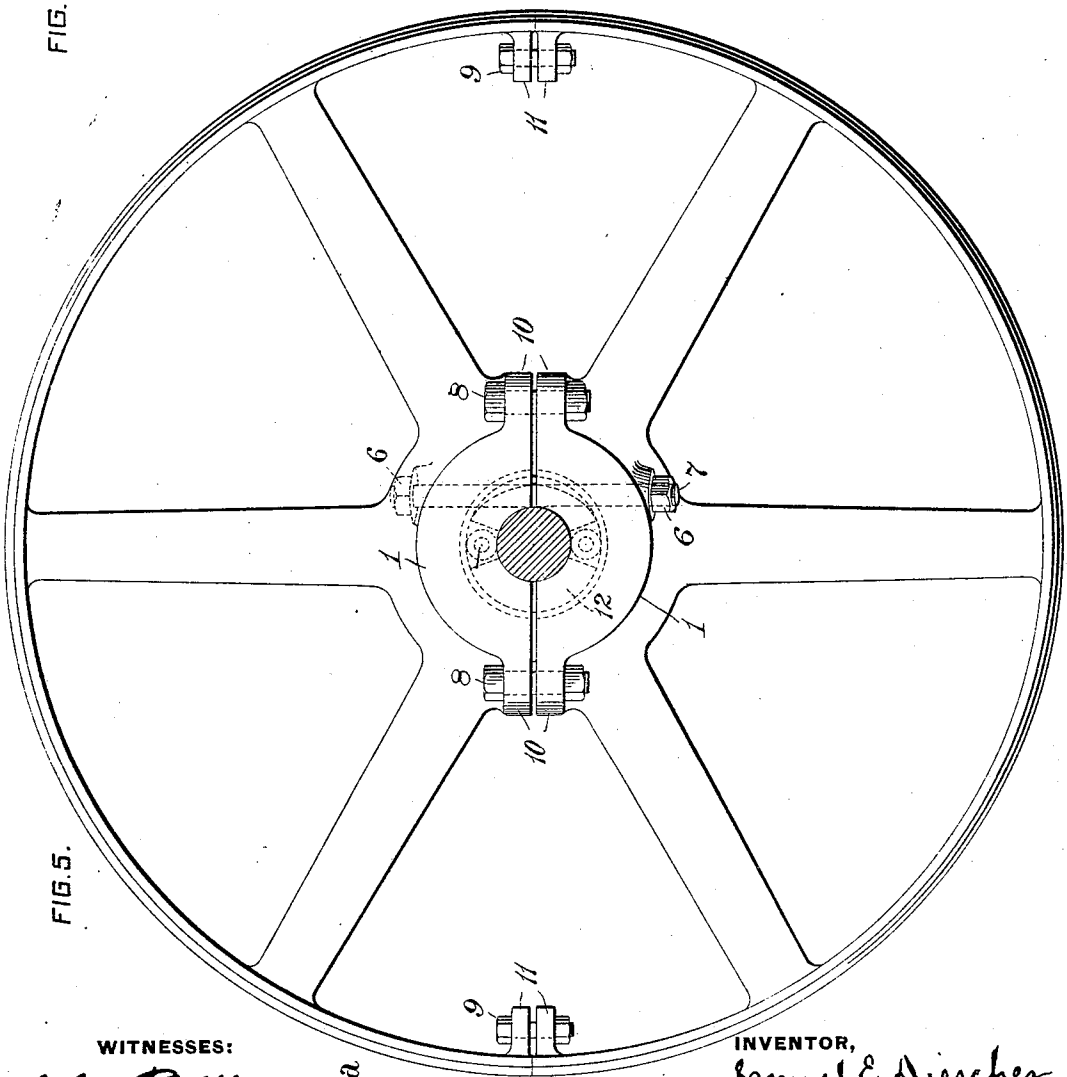


FIG. 5.

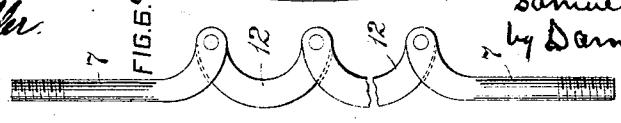


FIG. 6a.

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No. 631,957. Patented Aug. 29, 1899.

S. E. DIESCHER.

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(Application filed Mar. 9, 1899.)

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FIG. 7.

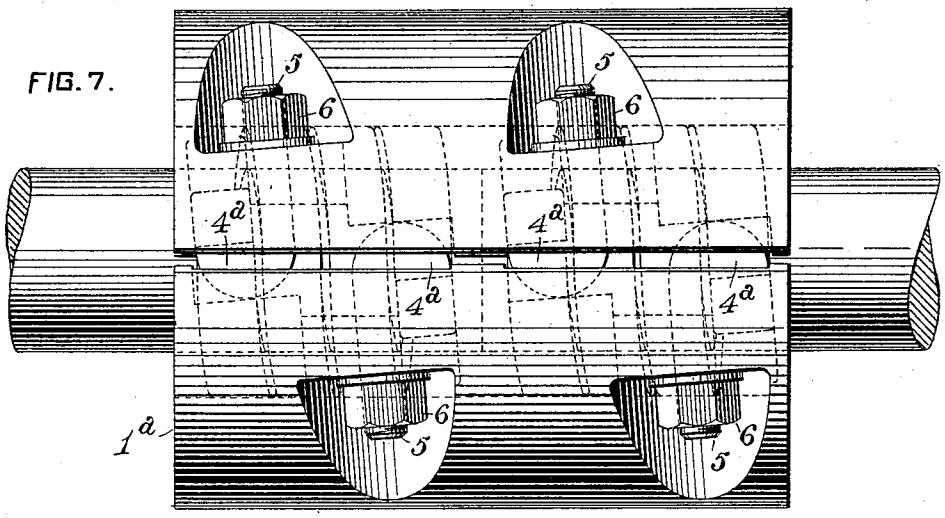


FIG. 8.

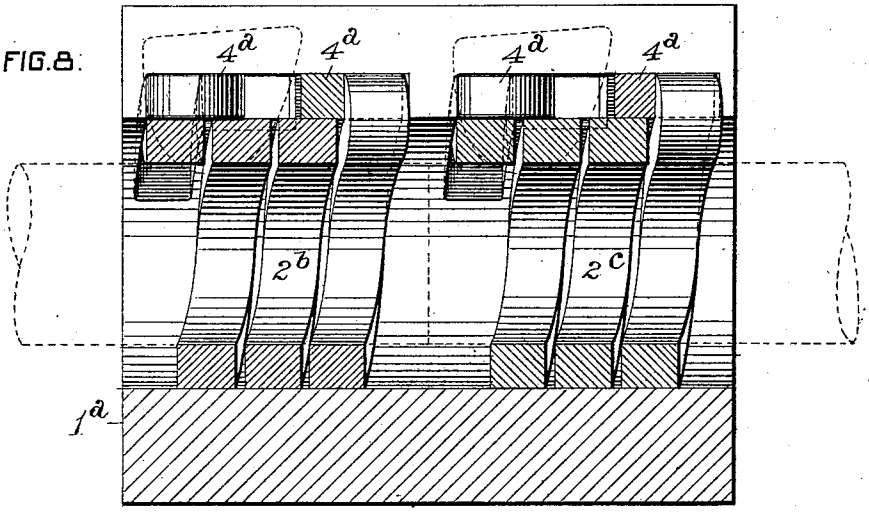
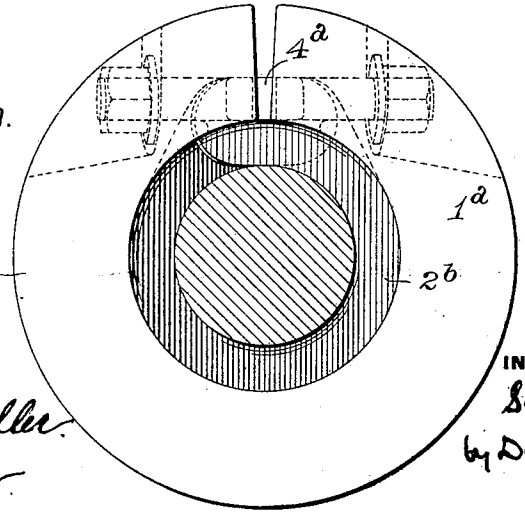


FIG. 9.



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UNITED STATES PATENT OFFICE.

SAMUEL E. DIESCHER, OF PITTSBURG, PENNSYLVANIA.

PULLEY AND SHAFT COUPLING.

SPECIFICATION forming part of Letters Patent No. 631,957, dated August 29, 1899.

Application filed March 9, 1899. Serial No. 708,342. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. DIESCHER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Pulley and Shaft Couplings, of which improvements the following is a specification.

The invention described herein relates to certain improvements in mechanism for connecting a part or member to be driven—such as a pulley, a shaft-section, &c.—to the power or driving shaft, and has for its object such a construction of connecting mechanism as will not require any special preparation of the driving-shaft—such as cutting keyways, &c.—and will permit the location of the pulley, &c., at any desired point.

In general terms the invention consists in the construction and combination substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a pulley secured by my improved mechanism to a driving-shaft. Fig. 2 is a sectional view of the same. Fig. 2^a is a sectional detail, the plane of section being indicated by the line $x\ x$, Fig. 1. Figs. 3 and 4 are views similar to Figs. 1 and 2, illustrating a modified construction. Figs. 5 and 6 are side and sectional elevations illustrating modifications in the fastening mechanism. Fig. 6^a is a detail view of the fastening or gripping member. Fig. 7 is an elevation of a clutch mechanism embodying my improvements. Fig. 8 is a sectional elevation of the same, and Fig. 9 an end elevation.

In the practice of my invention the hub 1 of the pulley is bored out so as to fit snugly around the cylindrical gripping member 2 when the latter is in its expanded or non-operative condition. The cylindrical gripping member consists of a bar, preferably square or oblong in cross-section and spirally coiled, as shown. This gripping member is made of such internal diameter as to be capable when non-contracted of sliding easily along the shaft. Recesses 3 are formed in the inner surface of the hub for the reception of hooks 4, adapted to engage radially-projecting ends of the gripping member. These hooks are provided with threaded stems 5, which project out through slots 3^a, formed through the wall of the hub, and connect with the recesses 3. These hooks are placed in position in the recesses with their stems projecting through the slots, and then the gripping member is contracted sufficiently to permit its radially-projecting ends 2^a to pass into the hub and be forced into the hub until the projecting ends pass into the recesses in front of the hooks 4. The pulley is then slipped onto the shaft, and when in proper position the nuts 6 are screwed up, thereby drawing the gripping member tightly around the shaft and also closing the split hub onto the outer surface of the gripping member. It will be observed that the means employed for applying tension to the ends of the gripping member are arranged on opposite sides of the split or opening a in the hub, so that the screwing up of the nuts 6 tends to contract the hub.

It will be understood from the foregoing that it is characteristic of my improvement that the hub is positively and frictionally engaged with the gripping member at the same time and by the same means that the gripping member is brought in frictional engagement with the shaft.

As shown in Figs. 3 and 4, my improved gripping mechanism can be applied to divided or sectional pulleys; but in such case the tightening-hooks can be dispensed with, the ends of the gripping member being extended tangentially, so as to project through holes in the hub. These tangential ends 7 are threaded for the reception of the tightening-nuts 6. In using this construction the gripping member is slipped onto the shaft and the pulley members placed around and secured in position by means of the bolts 8 and 9, which pass through lugs 10 and 11 on the hub and rim of the pulley. After the pulley-sections have been secured around the gripping member the nuts 6 are screwed up, thereby causing the gripping member to tightly grip the shaft and the hub of the pulley to be drawn closely into frictional engagement with the outer surface of the gripping member. After the nuts 6 have been tight-

ened up the nuts on the bolts 8 and 9 are also turned up to take up any slack or looseness between the pulley-sections resulting from tightening the nuts 6.

The construction shown in Figs. 1 to 4 necessitates the sliding of the pulley or the gripping member onto the shaft while the shaft is out of its bearings. As the removal of a line of shafting from its bearings involves considerable labor and loss of time of machinery driven by such line of shafting, provision is made by the construction shown in Figs. 5 and 6 for the placing of pulleys on shafts without the removal of the latter from its bearings. In this construction the gripping member is formed by a series of concavo-convex links or sections 12, having their ends hinged or otherwise loosely connected together so as to permit the gripping member to be straightened out, as shown in Fig. 6^a, and then coiled or wrapped around the shaft at the desired place. The pulley-sections are then clamped around the gripping member and shaft, as described in connection with the construction shown in Figs. 3 and 4, and the gripping member and pulley brought into operative relation to the shaft and to each other by screwing up the nuts on the threaded ends of the gripping member.

As shown in Figs. 7, 8, and 9, the essential parts of the mechanical devices forming the invention described herein may be employed as a coupling mechanism for the adjoining ends of two shaft-sections. These essential parts consist of an inclosing-sleeve portion 1^a and a gripping member. The sleeve portion 1^a is split or otherwise constructed so as to be capable of being collapsed or reduced in diametrical dimensions and forms in the construction shown in Figs. 1 to 6 the hub of the pulley. This collapsible sleeve forms opposing bearings or abutments for the means employed in tightening the gripping member, which consists of a flexible band coiled one or more times around the shaft.

In using my improvement as a coupler for shaft-sections it is preferred, although not necessarily essential, to form the gripping member in two similar parts or sections 2^b and 2^c, both inclosed in the split or collapsible sleeve.

Any suitable means may be employed for tightening the gripping members around the shaft-sections and closing the sleeve. Convenient means for effecting this purpose consist of hooks 4^a, engaging the ends of the gripping members and provided with threaded stems 5, projecting through the walls of the sleeve in a direction tangential to the gripping members.

It will be observed that the sleeve or hub is the medium through which movement is transmitted from the gripping member on the driving or power shaft to the pulley-rim in one case and to the shaft-section to be driven in the other case. When used as a coupling mechanism, the sleeve or hub serves the additional function of maintaining the shaft-sections in alinement.

I claim herein as my invention—

1. The combination of a collapsible sleeve, a flexible band coiled within the sleeve, and means for simultaneously contracting the band and closing the sleeve, substantially as set forth.

2. The combination of a pulley having a split or collapsible hub, a flexible band coiled within the hub, and means for contracting the band and the inclosing hub, substantially as set forth.

In testimony whereof I have hereunto set my hand.

SAMUEL E. DIESCHER.

Witnesses:

DARWIN S. WOLCOTT,

F. E. GAITHER.