

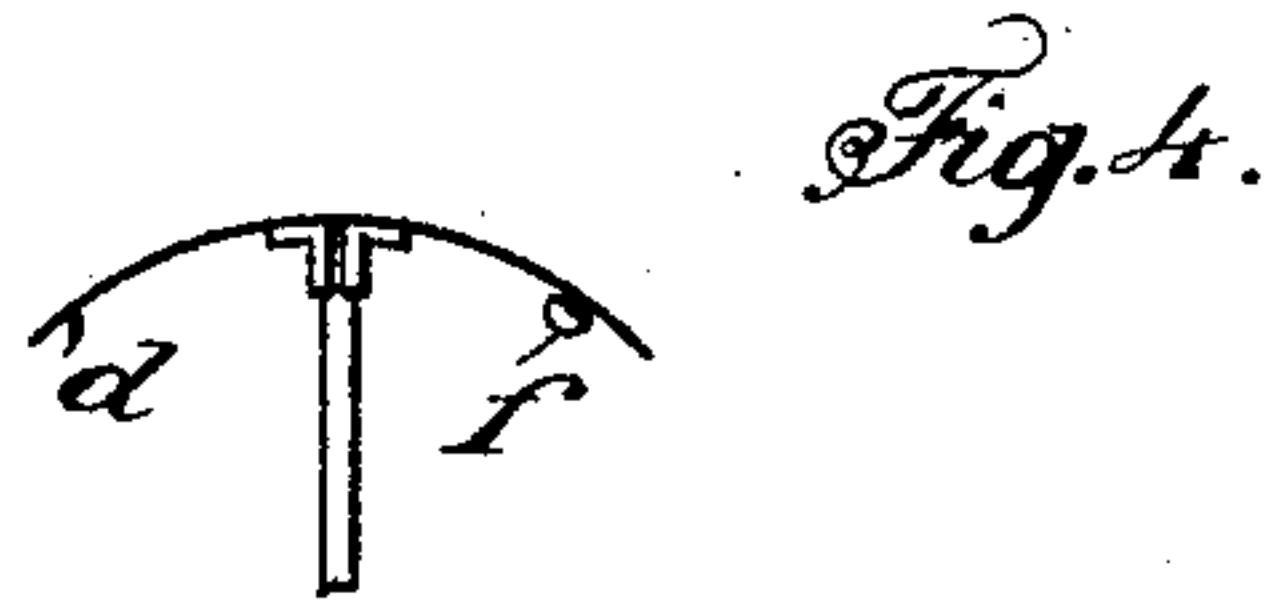
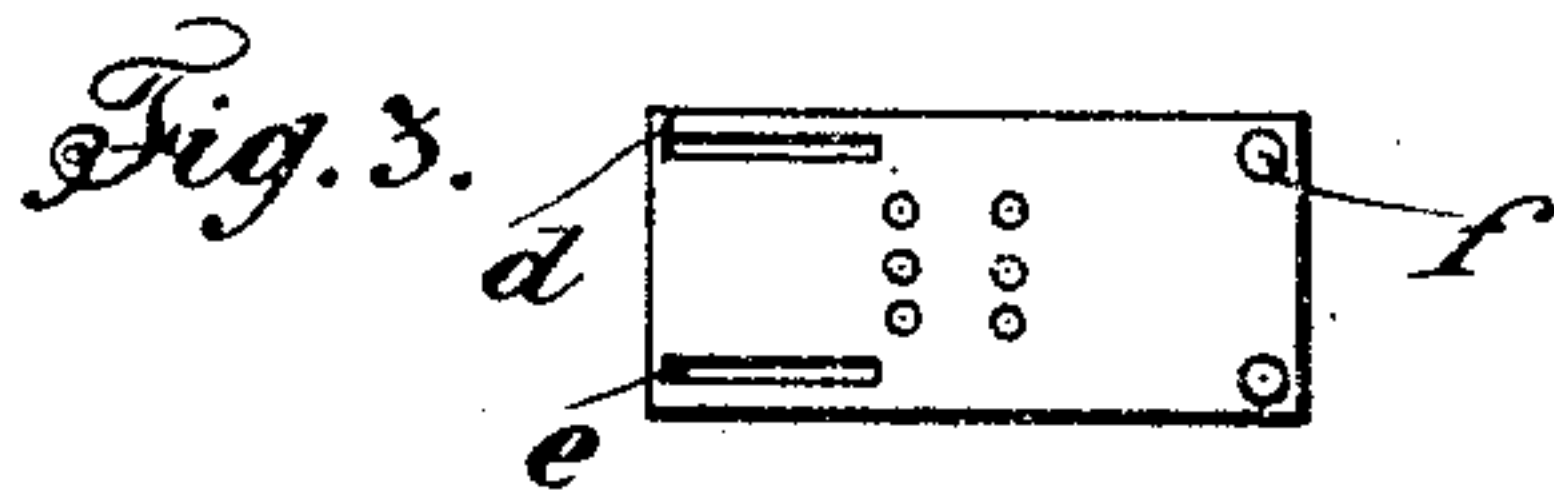
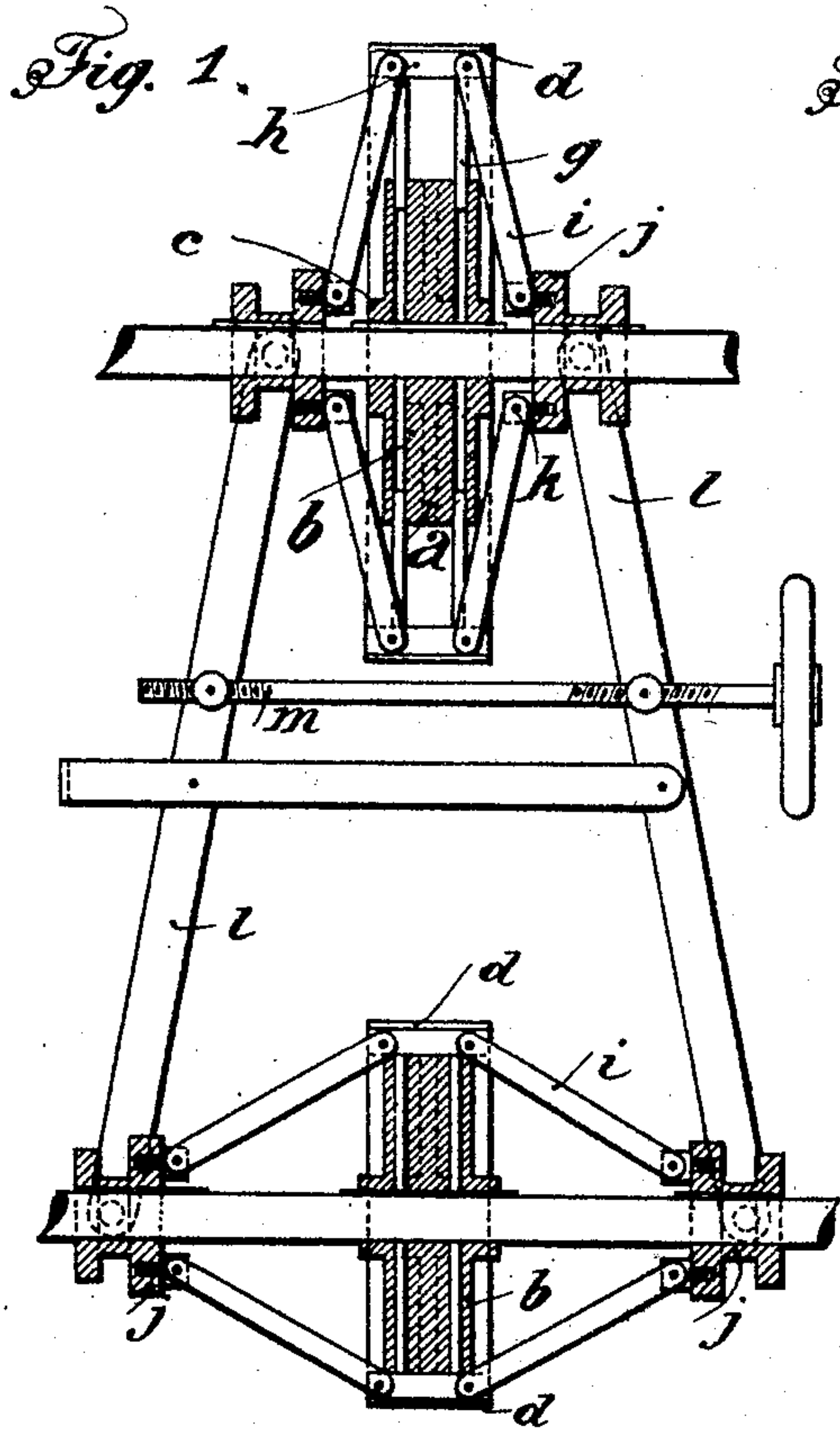
No. 771,006.

PATENTED SEPT. 27, 1904.

C. GIRAUD.
PULLEY.

APPLICATION FILED AUG. 17, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

CHARLES GIRAUD, OF BOURG, FRANCE.

PULLEY.

SPECIFICATION forming part of Letters Patent No. 771,006, dated September 27, 1904.

Application filed August 17, 1903. Serial No. 169,766. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GIRAUD, a citizen of the French Republic, and a resident of Bourg, France, have invented a new and useful Improvement in Pulleys, of which the following is a specification.

This invention relates to pulleys which may be expanded and contracted, so as to alter their diameter; and the object is to provide a pulley of this type of simple and effective construction.

According to the invention the rim of the pulley is composed of a series of segments secured to the hub by means of movable rods disposed in holes provided in the hub, these rods being adapted to slide or reciprocate under the influence of links connected to the rim and to sleeves or the like mounted on the pulley-shaft, the arrangement being such that when the links are operated to approach or recede from each other they effect the entrance or the exit of the movable rods into or from the hub, and thus vary the diameter of the pulley by expanding or contracting its rim.

Pulleys constructed as described are represented in the annexed drawings, wherein—

Figure 1 is a vertical section of two pulleys specially arranged. Fig. 2 is a vertical section showing a modified construction. Fig. 2^a is a similar view showing the parts in another position. Figs. 3 and 4 are respectively a detail plan and a transverse section; and Figs. 5 and 6 are side views of the pulleys shown in Figs. 1 and 2, respectively.

The arrangement illustrated in Fig. 1, which will be described first, allows of the expansion of one pulley simultaneously with the contraction of the other, whereby variation in the speed ratio may be effected without, however, changing the length of the belt. Both pulleys are alike, and each is composed of a metal disk *a*, which constitutes the hub and on which there are provided bosses *b* and a hub portion *c*, and the disk is suitably fixed to the shaft. Each boss *b* is pierced by a hole extending from the periphery of the disk *a* to the shaft. The rim is constituted by a number of segmental parts *d*, preferably of sheet-steel, each provided with two slots *e* and a correspond-

ing number of guides *f*, formed by headed rivets, as clearly shown in Figs. 3 and 4. When the segments are assembled, the guides of one slide in the slots of the adjacent one, and in this way they are connected together, while permitting of the requisite amount of play in order that each may take up a position to meet the variation of the diameter of the pulley. Each segment *d* carries two rods *g*, the length of which is equal to the length of the holes in the disk *a* plus the amount necessary for effecting their connection to the sector, to which they may be secured in any convenient manner—such, for instance, as by fitting in sockets *h* secured to the sector—the end of the rod being suitably shouldered to maintain the necessary relative position. The expansion and contraction of the rim are effected by single links *i*, which are arranged in pairs, as shown, and the links are pivoted to sleeves *j* at the point *k*, while at their other ends they are connected to the sectors *d*.

Pulleys constructed as described may be arranged in various ways, one of which is shown in Fig. 1, wherein, as previously explained, when one pulley is expanded the other is simultaneously contracted, this being effected by links *l*, suitably mounted and connected at their opposite ends to the sleeves *j*. These links *l* are operated by a screw *m*, and when this screw is turned it operates the links *l* to cause them to slide the sleeves *j* of one pulley together and apart in the other pulley, so that the latter is contracted at the same time as the other pulley is expanded. Of course other means may be adopted for effecting simultaneous contraction and expansion.

Now as to the arrangement shown in Figs. 2 and 6, the object of which is to obtain a maximum of expansion very compactly and simply, the rim and hub are constructed as already described; but the rods *g* instead of directly working in the holes of the disk *a* reciprocate in one, two, three, or more telescopically-arranged tubes *n*, according to the range of expansion required. The last tube is disposed in this case in the hole of the disk, and the tubes are provided with grooves and tongues or other means for guiding them and maintaining their alinement and stability.

The expansion and contraction of the pulley are effected by double links p , pivoted to the rim and disk at their remote ends and at their adjacent ends to a member q , sliding on the pulley-shaft, and in this member are slots r to admit of the working of the links, which when moved one way or the other effect the required variation in the diameter of the pulley. Fig. 2 shows the pulley expanded. Fig. 2^a represents the same contracted.

The advantages accruing to pulleys constructed as described are many, as will be obvious, for, *inter alia*, they admit of the employment of the ordinary belts, while they cannot be deformed by the normal pressure of the belts, and in varying the diameter no lateral movement arises.

I claim—

1. A pulley having its rim composed of a series of overlapping segments, interengaging guides on said overlapping segments, a hub, rods in pairs attached to said segments and slidably mounted in the hub, and links in pairs pivotally connected with said segments, the shaft of the pulley, and sleeves slidably mounted on the shaft and pivotally connected with said links as and for the purpose specified.

2. A pulley having a rim formed of segments, a hub having radial openings, rods

movably mounted in said radial openings, sockets attached to the inner faces of the segments and receiving the outer ends of said rods, pivoted double links connected with said segments, the pulley-shaft, and members slidably mounted on said pulley-shaft and pivotally connected with said links and having slots and admitting of the working of said links, substantially as and for the purpose specified.

3. As an improved article of manufacture, a pulley comprising a disk constituting a hub and provided with bosses having radial openings, a rim formed of segmental parts each provided with longitudinal slots at one end and headed rivets at the other, a pair of rods carried by each segment and slidably engaged in the radial openings of the disk, links pivotally mounted at opposite ends, a pulley-shaft, sleeves, links, a second pulley of like construction, and means intermediate said two pulleys for simultaneously contracting one and expanding the other substantially as described.

In testimony whereof I affix my signature.

CHARLES GIRAUD.

In presence of—

ANTOINE FOUCHEES,
AUGUSTE A. COQUET.