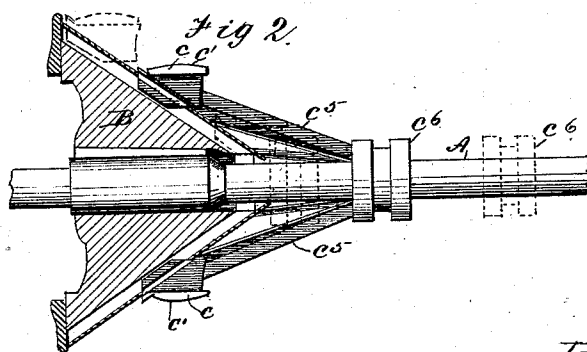
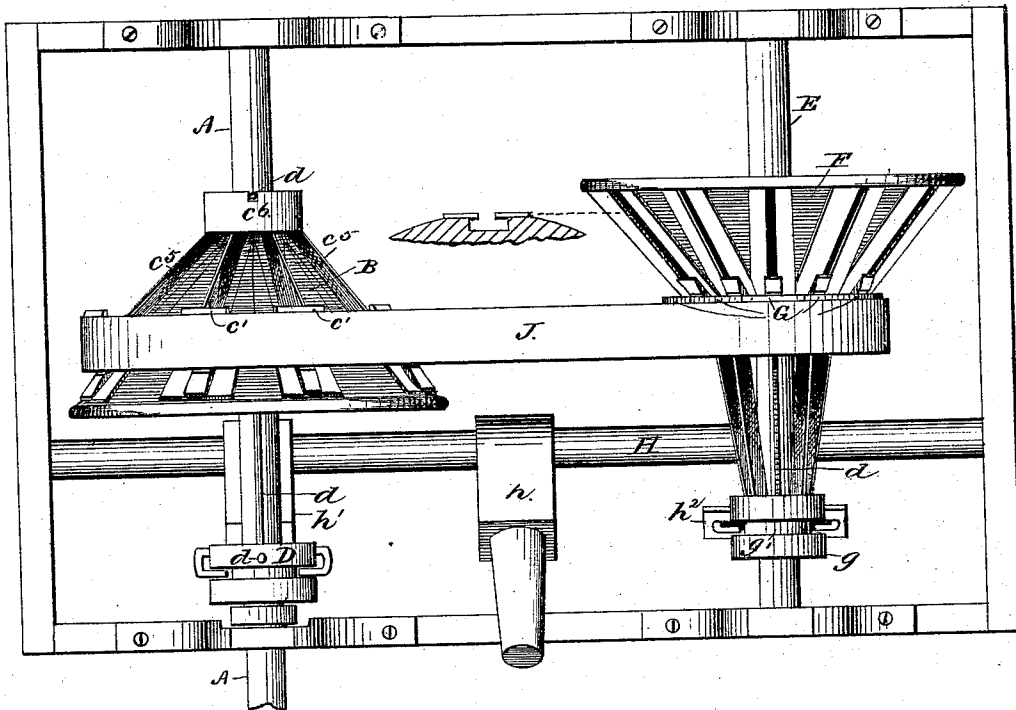


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EXPANSION-PULLEY.

No. 178,029.

Patented May 30, 1876.

Fig 1.



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Fig 3

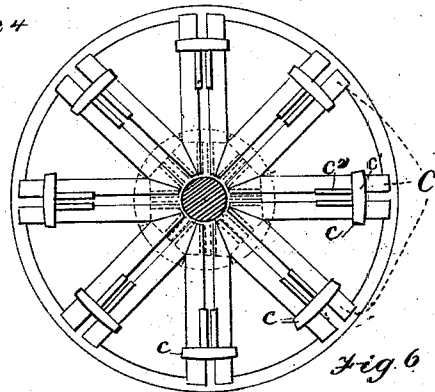
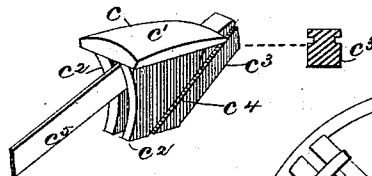


Fig 4

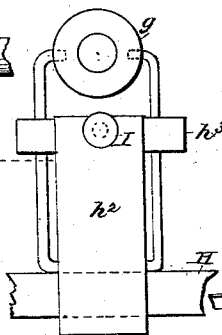
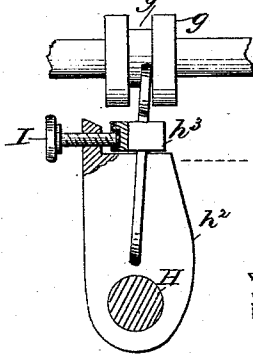
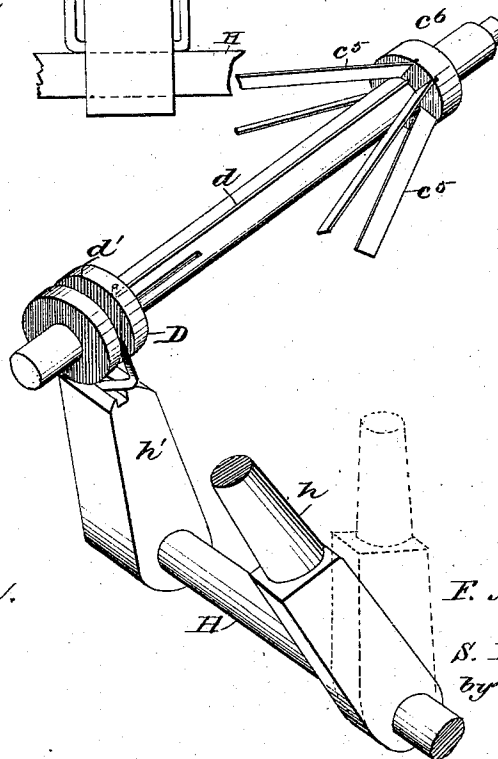


Fig 5



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UNITED STATES PATENT OFFICE

FRANCIS M. SHAKLEE, OF McCLEARY, AND SAMUEL B. NEPTUNE, OF MIDDLE CREEK, OHIO.

IMPROVEMENT IN EXPANSION-PULLEYS.

Specification forming part of Letters Patent No. 178,029, dated May 30, 1876; application filed February 11, 1876.

To all whom it may concern:

Be it known that we, FRANCIS M. SHAKLEE, of McCleary, in the county of Noble and State of Ohio, and SAMUEL B. NEPTUNE, of Middle Creek, in the county of Noble and State of Ohio, have invented a new and useful Improvement in Expansion-Pulleys; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention consists, broadly, first, in the combination of two expanding pulleys in reverse positions, united by a belt with mechanism for simultaneously expanding or contracting the same; second, in the combination of the two pulleys, and mechanism for moving them, with the mechanism for adjusting one independently of the other, for the purpose of tightening the belt; and, third, in the peculiar construction of the various parts, all of which will be fully described hereinafter.

In the drawings, Figure 1 represents a plan view of our invention; Fig. 2, a sectional elevation of one of the pulleys; Fig. 3, a perspective view of one of the sections; Fig. 4, a side and face view of the mechanism for independently adjusting one of the pulleys; Fig. 5, perspective view of the mechanism for expanding and contracting the pulleys, and Fig. 6 a face view of one of the sectional pulleys.

To enable others skilled in the art to make and use our invention, we will now proceed to describe fully its construction and manner of operation.

A, Fig. 1, represents the main shaft, supported in any proper bearings, to which power is communicated from any suitable source. B represents a conical disk, rigidly secured to the shaft A, which may be constructed generally of any proper size and suitable material, but is essentially provided upon its inclined face with a series of grooves or guideways, radiating from the center to the circumference, as shown. These ways may be made by cutting radial slots in the body of the cone, and attaching metal plates of suitable form in such manner as to project over the slot far enough to form guide-flanges, as

shown. C, Fig. 6, represents the pulley proper, constructed in sections *c c c*, as shown, each of which is provided with the bearing-surface *c'* for holding the belt, a rib, *c''*, and inclined face or foot *c'''*, having the projecting flange *c''''*, as shown in Fig. 3. The inclined foot *c'''*, it will be observed, is adapted in its size and shape to slide freely in the guideways of the cone-disk. *c⁵ c⁵* represent connecting-arms, of suitable length, each of which is pivoted at one end to the rib of one of the sections *c*, and suitably secured at the other to the sleeve or collar *c⁶*, as shown. This sleeve is free to move in a longitudinal direction, but is compelled to revolve with the shaft A. *d d* represent connecting-rods, secured at one end to the collar *c⁶*, and at the other to the collar D, as shown. These rods extend through suitable openings in the cone, which openings permit a free longitudinal movement, as before described, but compel revolution with the main shaft. E represents the shaft, carrying the companion-pulley, from which power is communicated to any desired point. F represents the cone-disk, and G the pulley. These parts, in all respects, are like the corresponding parts previously described. The position of the disk and pulley on the shaft is reversed, however, so that the small part of the cone is opposite the larger part of the other.

The mechanism for simultaneously expanding and contracting the pulleys will now be described. H represents a rock-shaft, suitably supported in proper bearings; and *h*, the lever by means of which it is moved. *h¹*, Fig. 5, represents a lever-arm secured thereto near one end, which is provided with bifurcated ends or fingers adapted to rest in the groove *d'* of collar D. *h²*, Figs. 1 and 4, also represents a similar lever-arm, secured near the other end of the shaft, which is provided also with fingers adapted to rest in the groove *g'* of the collar *g*, as shown. The construction of these parts, however, is modified somewhat, as will now be described, for the purpose of permitting this pulley to be expanded independently of the other for the purpose of tightening the belt. The fingers, which, in this case, consist of a bent iron rod or rods, are pivoted at their lower ends to the stand-

ard, and united above by a loose block, h^3 , Fig. 4. I represents a set-screw, held in a threaded socket in the standard, and secured at its inner end to the loose block, by means of which the position of the latter, and, consequently, also that of the collar g , is adjusted relatively to the fixed standard. J represents a belt, by means of which the two pulleys are united.

The operation of the parts is as follows: Motion having been communicated to the main shaft, power is conveyed by means of the connecting-belt from one pulley to the other, in the usual well-known manner.

When it is desired to change the speed, the rock-shaft is turned by means of its lever, and the collars of the pulleys are consequently simultaneously moved upon their respective shafts. The result of this action, of course, is to cause the sections of each pulley to move in the guideways of the conical disks, and, their positions being reversed, one will be necessarily expanded and the other contracted. If the belt should be too loose, the proper pulley may be independently expanded by moving out the loose block from the fixed standard by means of the adjusting-screw.

The advantages of the construction described will be readily perceived. The speed may be readily changed from fast to slow, or the opposite, without checking the motion. A belt

may be employed, and it will retain its place without guides.

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

1. In combination with two pulleys, and mechanism for moving them, mechanism for adjusting one independently of the other, substantially as described.

2. A conical disk fixed to the shaft, and provided with radial guideways, in combination with a sectional pulley adapted to slide upon the disk, substantially as described.

3. The combination of the fixed conical disk, the sectional pulley adapted to slide upon the disk, the rib attached to the sections, and the sliding collar, as described.

4. The combination of the section c , constructed as described, with the rib c^5 and collar c^6 , as described.

5. The combination of the standard H, loose block h^3 , and set-screw I with the finger and loose collar, as described.

This specification signed and witnessed this 1st day of February, 1876.

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SAML. B. NEPTUNE.

Witnesses:

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