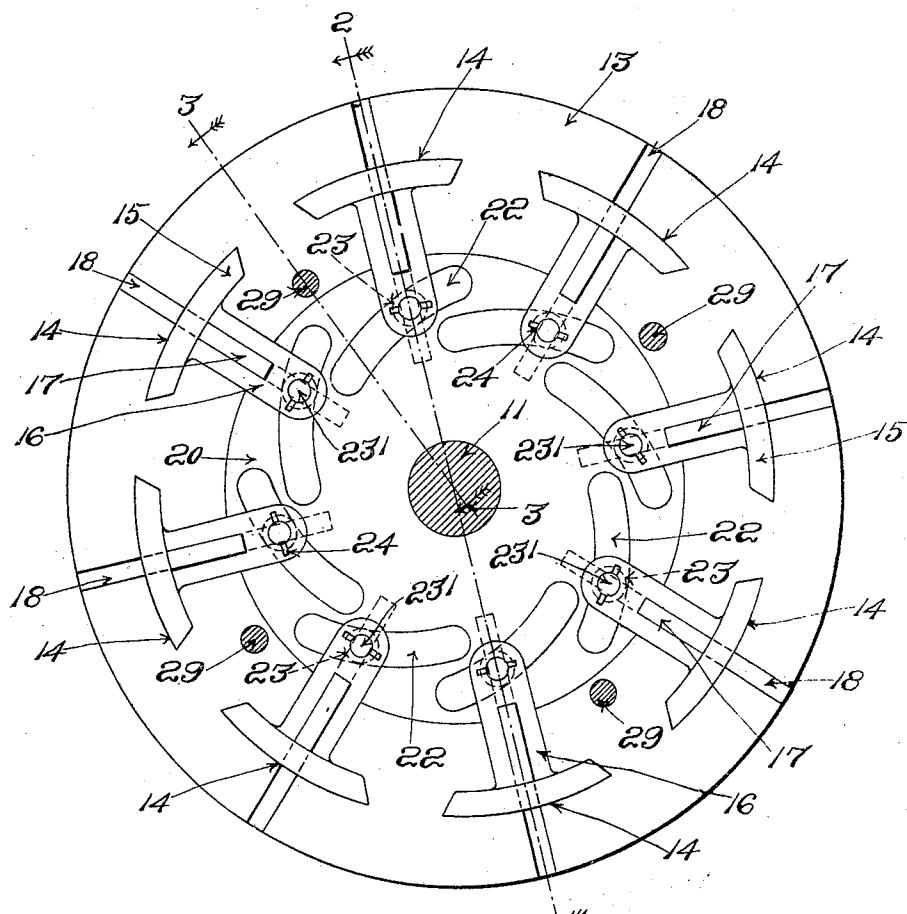


No. 809,169.

PATENTED JAN. 2, 1906.

J. P. BRENNAN.  
EXPANSIBLE PULLEY.  
APPLICATION FILED JUNE 2, 1905.

2 SHEETS- SHEET 1,



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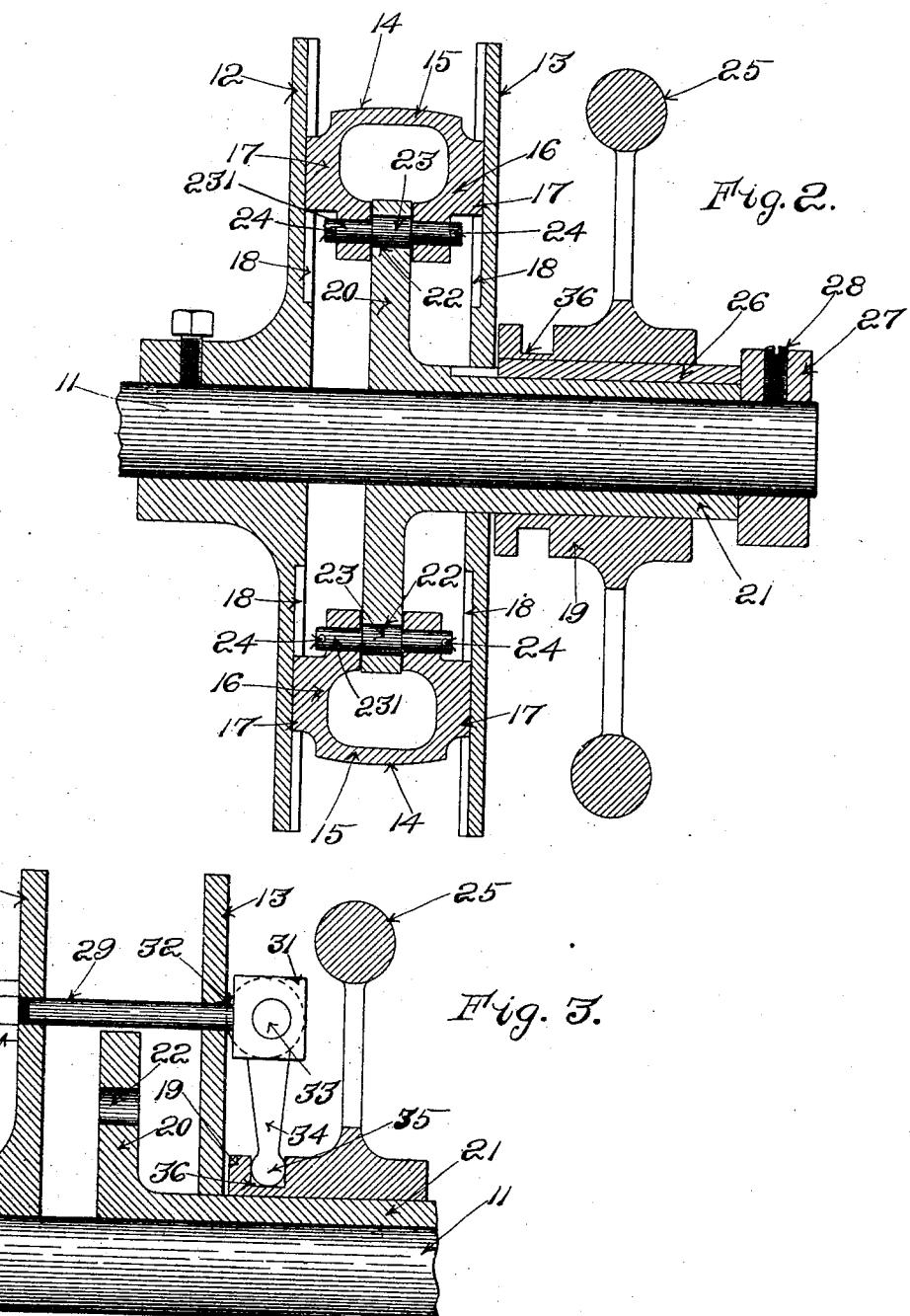
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

JOHN P. BRENNAN, OF LAWRENCE, MASSACHUSETTS.

## EXPANSIBLE PULLEY.

No. 809,169.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed June 2, 1905. Serial No. 263,401.

*To all whom it may concern:*

Be it known that I, JOHN P. BRENNAN, a citizen of the United States, residing at Lawrence, county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Expansible Pulleys, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention has for its object to produce an improved expansible pulley composed of radially-arranged sections capable of simultaneous adjustment, so that the effective diameter of the pulley may be increased or diminished, as desired.

20 My invention also has for its object to provide improved locking means by which the sections when adjusted to any given diameter may be rigidly fixed in the desired position.

25 My improved pulley is also very light and inexpensive to build, but has a high degree of strength and is very conveniently adjusted.

30 While I have shown my invention as embodied in a particular construction, it is, however, obvious that many changes in form may be made without departing from the spirit of my invention.

35 The invention will be fully understood from the following description, taken in connection with the accompanying drawings, and the novel features thereof are pointed out and clearly defined in the claims at the close of this specification.

40 Referring to the drawings, Figure 1 is a side elevation of an expansible pulley embodying my invention, one of the side plates thereof having been removed for convenience in illustrating the construction. Fig. 2 is a section on line 2 2, Fig. 1, looking in the direction of the arrows. Fig. 3 is a section on line 3 3, Fig. 1, looking in the direction of the arrows.

45 Referring now to the drawings, the main shaft is indicated at 11. Fast thereto is a side plate 12, and at a suitable distance therefrom is a second side plate 13. The side plate 13 is not, however, fast to the shaft 12, but turns with it, being held in place by means to be described later.

50 The rim of the pulley upon which the belt runs is composed of sectors 14 of the shape shown in Fig. 1, being composed of a circum-

ferential portion 15 and a body portion 16, 55 provided with ribs 17, adapted to slide in the radial grooves 18 in the two side plates 12 and 13. These sectors 14 are moved simultaneously toward or away from the center of the pulley to diminish or increase its effective size. When in the position nearest the center of the pulley, the circumferential portions 15 of adjacent sectors nearly touch each other, thus forming a pulley having a substantially solid rim. When the sectors 14 60 are pushed out from the center, spaces intervene between the said circumferential portions, as shown in Fig. 1. The arrangement of such radial sectors is old, and I make no claim to this as a part of my invention. The 65 engagement of the sectors with the side plates prevents the side plates moving independently of each other, as well as the locking means, to be later described.

70 Upon the shaft 11 I mount a disk 20, 75 which has formed integral therewith a sleeve 21, loose upon the said shaft 11 and free to turn relatively thereto. When the parts are assembled, the disk 20 is located between the two side plates 12 and 13, the sleeve 21 passing through the central hole in the said side plate 13. The disk 20 is provided with a series of cam-slots 22, (see Fig. 1,) having their inner ends nearer to and their outer ends farther from the center of the pulley. These 80 cam-slots have any convenient form to give to the said sectors the desired movement. Rollers 23 are mounted on studs or axles 231 in holes in the inner ends of the body portion 85 of the sectors 14. These rollers 23 ride up 90 in the said slots 22 when the said disk 20 is rotated about the shaft 11 independently of the two side plates 12 and 13. The studs or axles 231 are kept from becoming displaced by the cotter-pins 24.

95 To provide for the adjustment of the sectors 14, I place a hand-wheel 25 upon the sleeve 21 and introduce a spline 26 between the hub of the hand-wheel and the sleeve 21 of the disk 20, so that the hand-wheel is free 100 to move for a short distance longitudinally on the shaft 11, but when rotated will cause the said sleeve 21, and attached parts, to rotate upon the shaft. A collar 27, held fast to the hand-wheel 25, pulling off over the end 105 of the shaft and also to maintain the sleeve 21 in its proper place. The rotation of the hand-wheel 25 causes the disk 20 to rotate

and moves the sectors 14 in or out from the center of the pulley, the rollers 23 riding upon the edges of the cam-slots 22, as previously described.

Having now described the means by which I produce the radial movements of the sectors 14 in the radial slots 18 in the side plates 12 and 13, I will now describe the means by which the parts are locked or held in place after the desired adjustment has been given to them. Bolts 29 are placed at convenient points about the side plates 12 and 13 and pass through from one side plate 12 to the other side plate 13. A nut 30 (see Fig. 3) is placed upon the end of the bolt 29, which passes through the side plate 12, while the other end of the said bolt is provided with a squared portion 31, which forms a bearing for the stud 33, upon which is located an eccentric or cam 32. The cam or eccentric 32 is provided with an arm 34, at the lower end of which is formed a ball 35, which rests in a groove 36, formed in the hub 19 of the hand-wheel 25. The position of the bolt 29 is adjusted by the nut 30, so that the eccentric or cam 32 may be brought to bear with the desired pressure against the exterior surface of the side plate 13, as shown in Fig. 3, when the parts are locked in position. It will thus be seen that when the hand-wheel 25 is pulled toward the operator who stands at the right when the parts are placed as seen in Figs. 2 and 3 that the arm 34 and cam or eccentric 32 are moved by the movement of the said hand-wheel and the pressure exerted by the eccentric 32 upon the surface of the side plate 13 is removed. The hand-wheel 25 may then be turned to the right or to the left, as the case may be, to obtain the proper adjustment of the sectors 14. The desired adjustment of the sectors having been obtained the hand-wheel 25 is pushed toward the main part of the pulley and the parts are firmly locked in place. If more convenient, other forms of cam or eccentric may be used and more of these locking devices supplied at desired intervals about the pulley; but I find that four of these devices placed as shown in Fig. 1 are sufficient to hold the parts firmly in place.

What I claim is—

1. The improved expandable pulley comprising a shaft, a pair of side plates provided with radially-arranged slots, one of said side plates being fast and the other loose on the said shaft, sectors radially movable in the said slots, a cam-disk intermediate the said side plates and provided with a sleeve about the said shaft and extending through said loose side plate, and moving means on the said sleeve by the rotation of which the cam-disk is rotated independently of the side plates.

2. The improved expandable pulley com-

prising a shaft, a pair of side plates provided with radially-arranged slots therein, one of said side plates being fast to the said shaft, sectors radially movable in the said slots, a single cam-disk intermediate the said side plates and acting upon the said sectors, said cam-disk being provided with a sleeve about the said shaft, and a hand-wheel on the said sleeve by the rotation of which the cam-disk is rotated independently of the said side plates. 75

3. The improved expandable pulley comprising a shaft, a pair of side plates provided with radially-arranged slots, one of said side plates being fast to the said shaft, sectors radially movable in the said slots, a cam-disk 80 acting upon said sectors and provided with a sleeve about the said shaft, a hand-wheel slidably movable on said sleeve by the rotation of which the said cam-disk is rotated independently of the said side plates, and locking means operated by the longitudinal movement of said hand-wheel. 85

4. In an expandable pulley, the combination with side plates, movable sectors, an adjusting-disk, and locking means, of a hand-wheel slidably mounted on a sleeve of the said adjusting-disk, whereby rotation of the said hand-wheel adjusts the sectors and longitudinal movement operates the locking means. 95

5. In an expandable pulley, the combination with a pair of side plates provided with radial slots, and sectors radially movable in the said slots, of locking means comprising a bolt, a head for one end of the said bolt, a 100 cam mounted upon the other end of said bolt and engaging one of the said side plates, and moving means for the said cam. 99

6. In an expandable pulley, the combination with a shaft, a pair of side plates thereon provided with radial slots, and sectors radially movable in the said slots, of locking means comprising a bolt, a head for one end of said bolt, a cam mounted upon the other end of said bolt and engaging one of the said side plates, an arm fast to the said cam, and a hand-wheel slidably mounted with relation to the said shaft and provided with a grooved hub within which the end of the said arm is received, whereby the longitudinal movements of the said hand-wheel with relation to the said shaft cause movement of the said cam to operate the locking means. 115

7. The improved expandable pulley and locking means therefor, comprising a pair of side plates provided with radial slots, sectors radially movable in the said slots, an adjusting-disk intermediate the said pair of side plates provided with cam-slots therein, said adjusting-disk being also provided with a 120 sleeve about the driving-shaft on which the pulley is mounted, connecting means between the said cam-slots and the said sectors, 125

a hand - wheel slidably mounted upon the sleeve of the said adjusting-disk and adapted to rotate the said adjusting-disk independently of the said side plates, and locking  
5 means for the parts of the said expandible pulley operated by the longitudinal movement of the hand-wheel.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN P. BRENNAN.

Witnesses:

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BARTHOLOMEW J. CONLON.