

(No Model.)

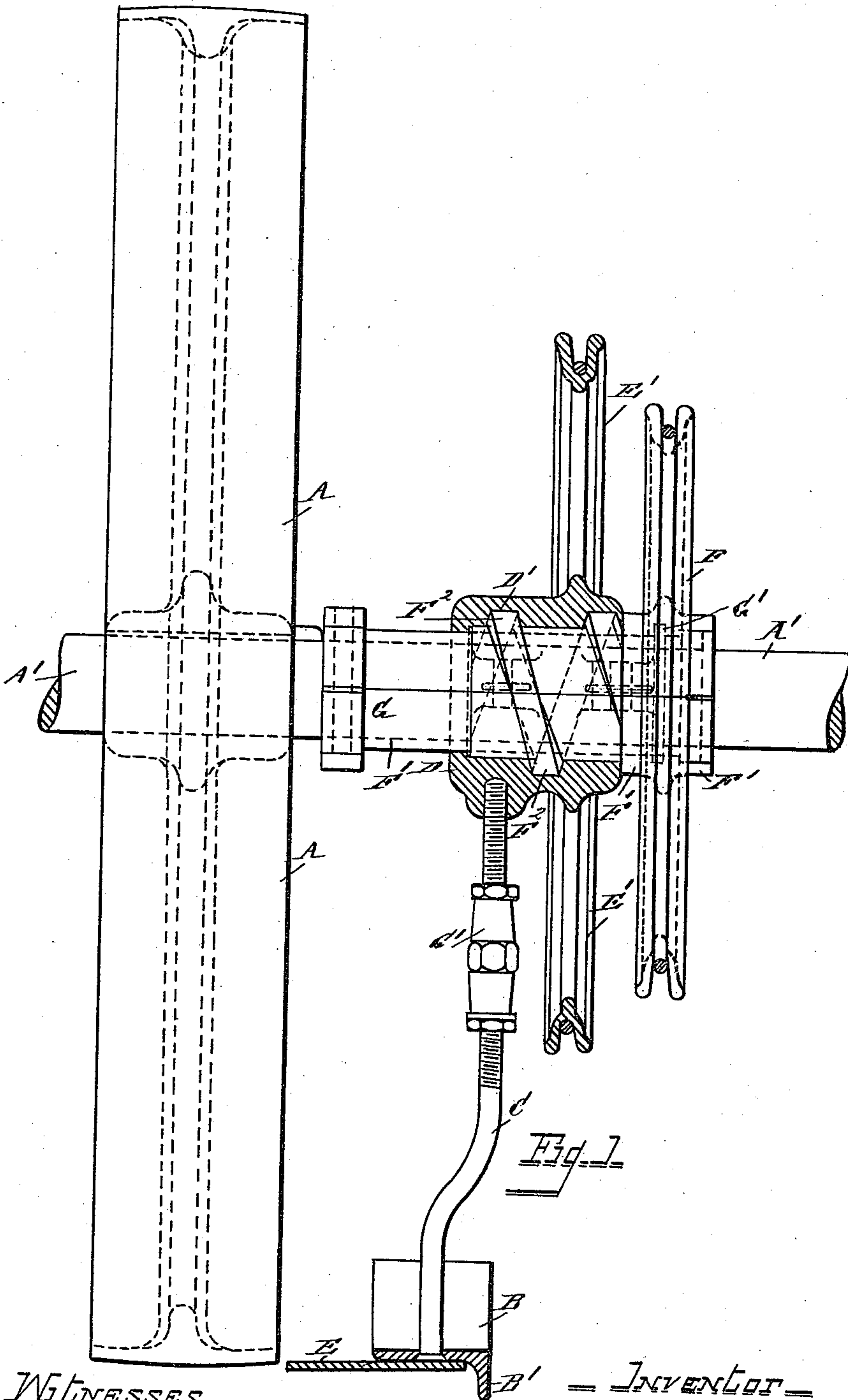
3 Sheets—Sheet 1.

P. J. HOLLOWAY.

APPARATUS FOR REPLACING BELTS UPON PULLEYS.

No. 440,862.

Patented Nov. 18, 1890.



WITNESSES—  
Per R. J. Ellis.  
Henry Martin

INVENTOR—  
Philip J. Holloway  
By his Attorney—J. W. Barker

(No Model.)

3 Sheets—Sheet 2.

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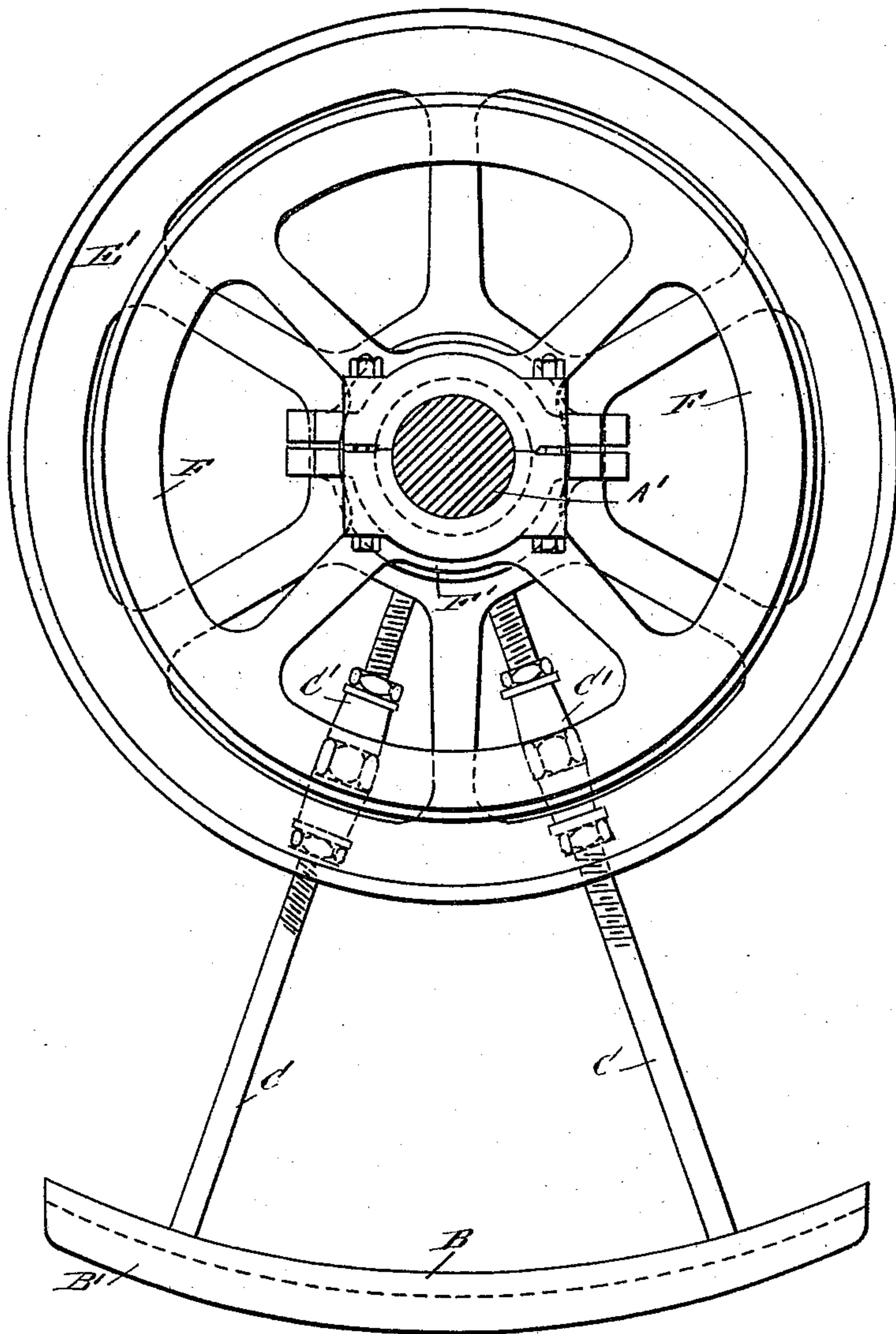


Fig. 2.

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Percy R. J. Willis.  
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(No Model.)

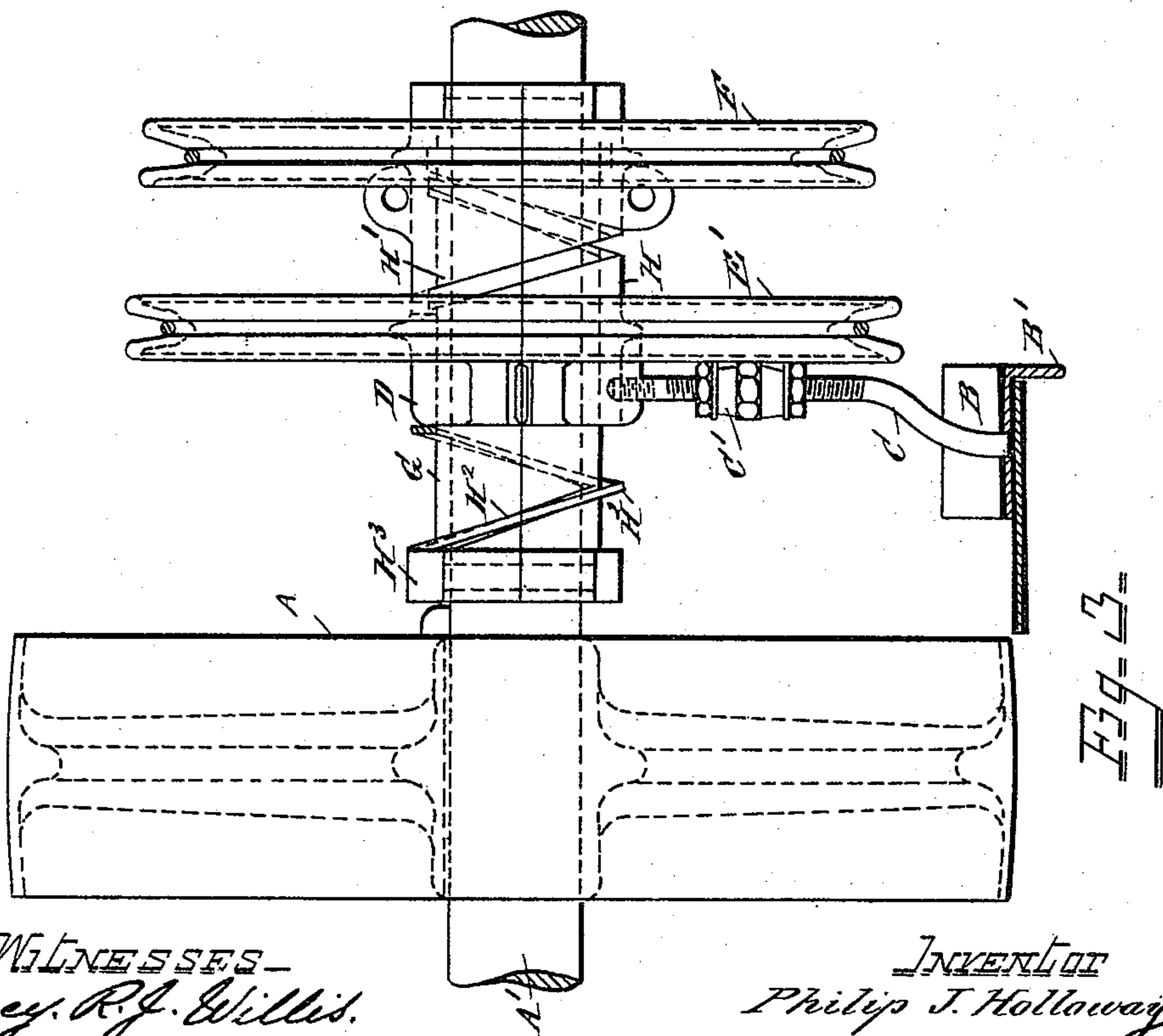
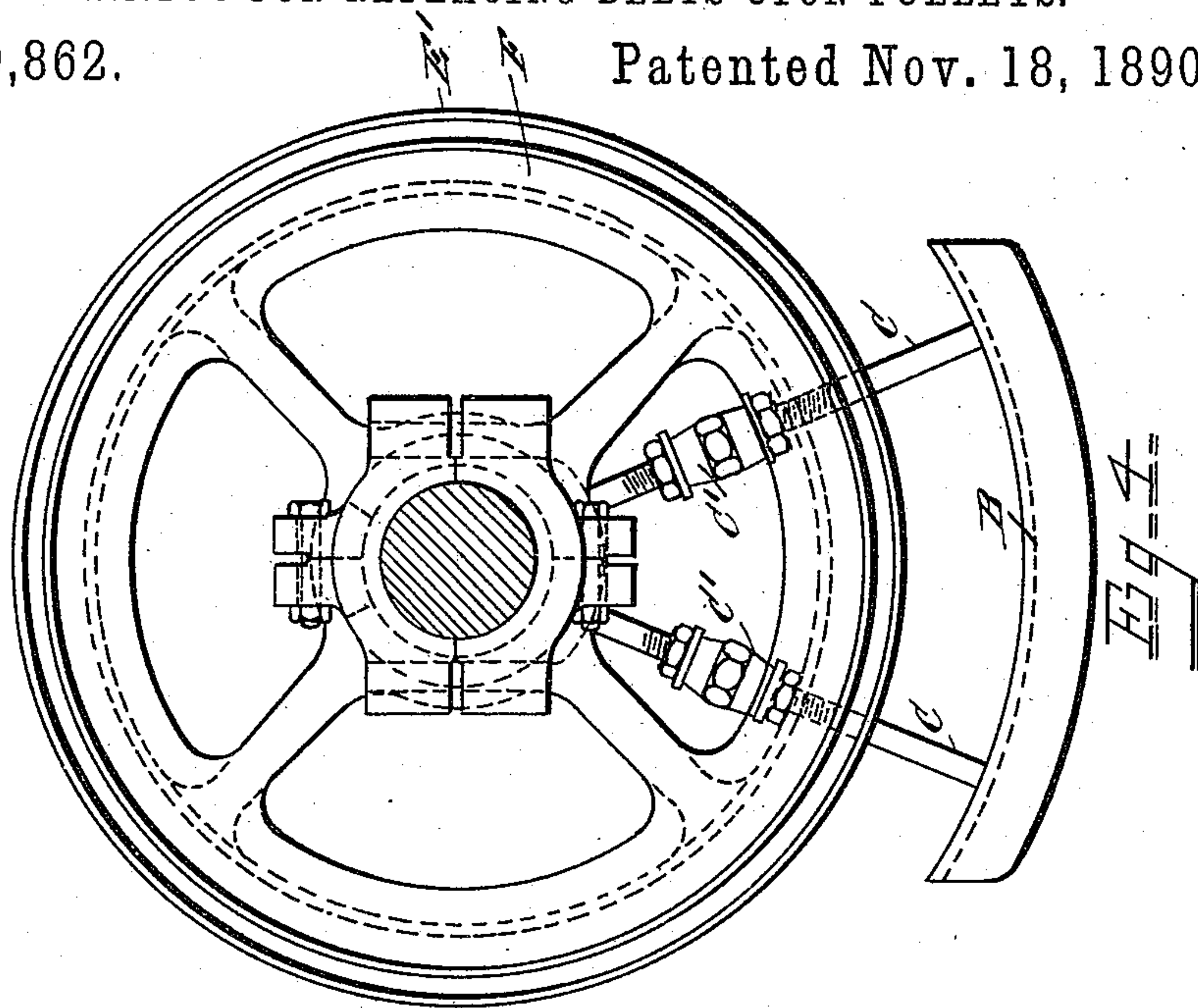
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# UNITED STATES PATENT OFFICE.

PHILIP JOSEPH HOLLOWAY, OF WINNINGTON, ENGLAND.

## APPARATUS FOR REPLACING BELTS UPON PULLEYS.

SPECIFICATION forming part of Letters Patent No. 440,862, dated November 18, 1890.

Application filed November 20, 1889. Serial No. 331,050. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP JOSEPH HOLLOWAY, a subject of the Queen of Great Britain, residing at 7 Moss Terrace, Winnington, Northwich, in the county of Chester, England, have invented certain new and useful Improvements in Apparatus for Replacing Belts upon Pulleys when in Motion; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a part-sectional side elevation of my improved apparatus for replacing belts upon pulleys, showing the same in operative position. Fig. 2 is an end elevation thereof. Fig. 3 shows a modification of my improved apparatus as it is constructed for putting belts on small pulleys. Fig. 4 is an end elevation thereof.

Like letters of reference indicate corresponding parts in the several figures.

In the accompanying drawings, the letter A represents an existing pulley, and A' an existing shaft. My improved apparatus consists in part of a quadrant or part of a quadrant B, constructed of steel or wrought-iron and having its periphery curved to the same radius as the pulley upon which the belt is to be placed. The width of the quadrant is less than the belt to be applied, the ratio being about as three and one-fourth inches is to two and three-fourths inches, varying according to the width and weight of the belt. On the edge of the quadrant farthest from the belt-pulley is a small flange B' to prevent the belt from being pushed over the quadrant while being put on the pulley. The quadrant is carried by wrought-iron or steel arms C, made in two parts and secured with right and left handed threads. Sleeve-nuts C' enable the length of the arms C to be adjusted so as to enable the quadrant to put the belt on pulleys of various diameters, if desired.

The arms C are screwed into a boss D of either steel, wrought-iron, or any cast metal, in which is cut a spiral groove D', having a pitch equal to the overhang of the belt E on the quadrant. Formed integral with the boss

D is a chain or rope pulley E' for raising the quadrant with the belt lying upon it. The size of this chain or rope pulley will depend upon the diameter of the belt-pulley and the width and weight of the belt, and must be large enough to exert sufficient power to raise the quadrant.

The belt is pushed toward the belt-pulley while the quadrant is being raised by another chain or rope pulley F, (hereinafter called the "pressure-pulley," ) of sufficient diameter and made in one piece, with an extended boss F', upon which is cut a thread F<sup>2</sup>, corresponding to the spiral groove D' in the boss D, in which it works. In order to prevent the machine moving laterally upon the loose bush G, by which the apparatus is carried when not in use, a groove is cut around the inside of the boss F' of the pressure-pulley, and in which groove is fitted a small collar G'.

When, as shown in Figs. 3 and 4, it is desirable to reduce the diameter of the boss of the quadrant to the minimum on account of the small diameter of the belt-pulley or for any other reason, this can be done by dispensing with the internal groove D' and thread F<sup>2</sup>, as shown in Fig. 1, and making the ends of the bosses of the quadrant and the pressure-pulley, respectively, with one thread or spiral cam H H', equal in pitch to the overhang of the belt upon the quadrant and adapted to abut against each other. In this case a spring H<sup>2</sup> of one single spiral between the collar H<sup>2</sup> of the loose bush G and the boss D of the quadrant will be required to keep the machine in gear and ready for use.

In order to facilitate the application of my improved apparatus to existing shafts, it is conveniently made in two halves and bolted together, as will be understood.

The manipulation of the aforescribed forms of my invention is as follows: When the belt is off the pulley and required to be put on by the attendant, the quadrant, with the belt lying upon it ready to be picked up, is pulled round by its own chain or rope pulley into a position ready for the belt to be pushed onto the belt-pulley, which is accomplished by pulling round the pressure-pulley in a contrary direction. This action causes the groove and thread or butting-threads,



as the case may be, to unscrew in one half-revolution of each a total distance equal to the overhang of the belt on the quadrant, which distance the belt is now on the pulley  
5 and is left to climb the remainder of its own width. In order to prevent the quadrant being carried round with the shaft when the belt is being tightened on the pulley, the quadrant is beveled inward from the edge to the  
10 flange, as shown in the drawings. The attendant is quite out of danger, as the chains or ropes can be carried to any point, and the speed of the engine need not be slackened during the operation.

15 Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. An apparatus for putting belts on pulleys, consisting of the quadrant B, made of a  
20 band of metal having a flange B', arms C, made of two parts, the one part of each being secured to the quadrant B, the other part screwed into the boss D, and both parts of each made adjustable and secured together  
25 by the sleeve-nut C', the chain-wheel E, formed integral with the boss D, having an internal spiral groove D', the pressure-pulley F, integral with the extended boss F', formed with a thread F<sup>2</sup>, adapted to engage with the

groove D', and a groove in the boss F', in  
30 which is fitted the ring G', adapted to keep the pressure-pulley in place, and the loose collar G, all arranged in combination, substantially as and for the purpose hereinbefore  
35 set forth with reference to Figs. 1 and 2 of the drawings hereunto annexed.

2. An apparatus for putting belts on pulleys, consisting of the quadrant B, arms C, sleeve-nuts C', chain-pulley E, formed integral with a boss made with a spiral cam H, 40 pressure-pulley F, formed integral with a boss F', made with a spiral cam H', adapted to engage with the spiral cam H, the spring H<sup>2</sup>, in compression between the collar H<sup>3</sup> and the  
45 boss D, and the loose collar G, carrying the mechanism, all arranged in combination, substantially as and for the purpose hereinbefore set forth with reference to Figs. 3 and 4 of the drawings hereunto annexed.

In witness whereof I have hereunto signed 50 my name in the presence of two subscribing witnesses.

PHILIP JOSEPH HOLLOWAY.

Witnesses:

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