

F. F. CLARKE.
BELT SHIFTER FOR CONE PULLEYS.
APPLICATION FILED SEPT. 30, 1908.

963,209.

Patented July 5, 1910.

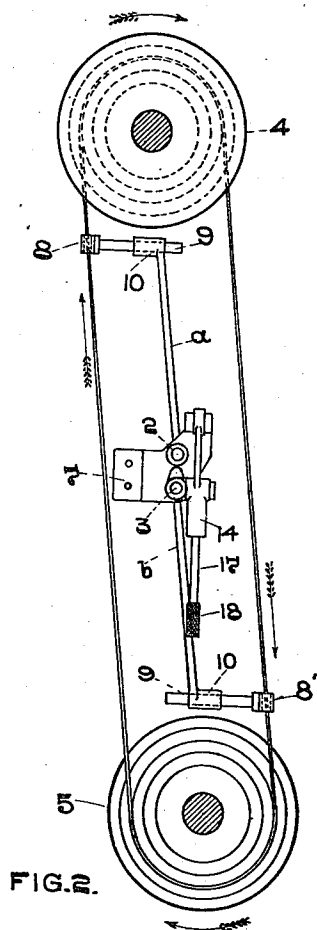


FIG. 2.

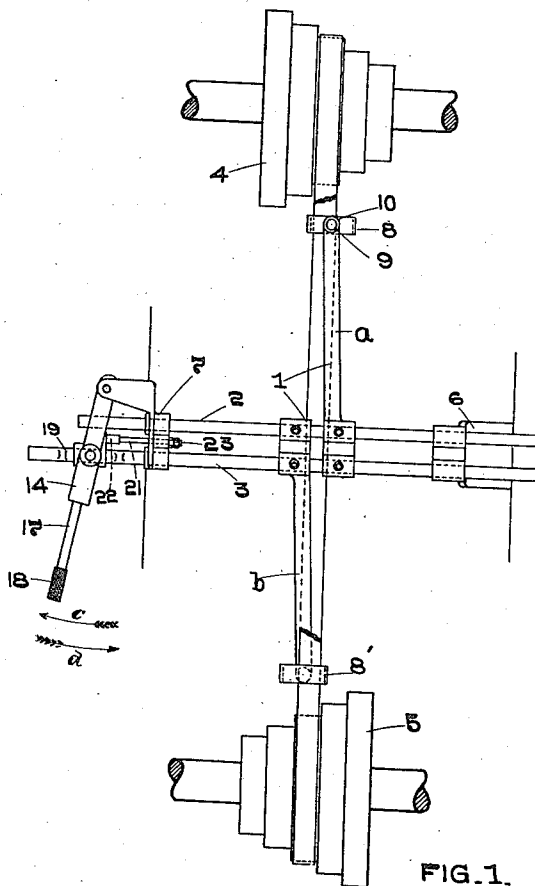


FIG. 1.

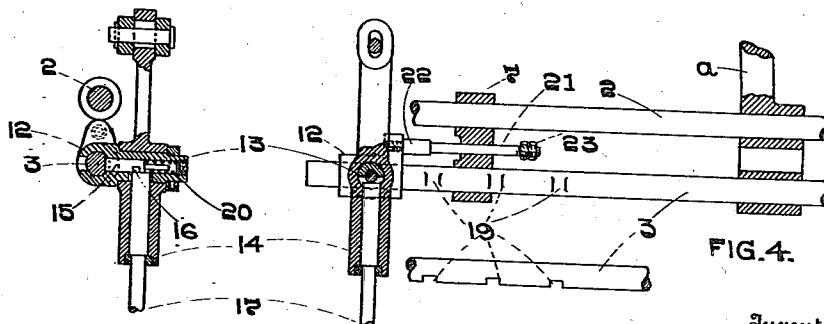


FIG. 3.

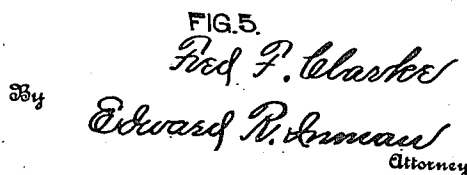


FIG. 4.

Inventor

Witnesses
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FIG. 5.
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UNITED STATES PATENT OFFICE.

FREDERICK F. CLARKE, OF FRANKLIN, PENNSYLVANIA, ASSIGNOR TO COLBURN MACHINE TOOL COMPANY, OF FRANKLIN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BELT-SHIFTER FOR CONE-PULLEYS.

963,209.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed September 30, 1908. Serial No. 455,583.

To all whom it may concern:

Be it known that I, FREDERICK F. CLARKE, citizen of the United States, residing at Franklin, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Belt-Shifters for Cone-Pulleys, of which the following is a specification, reference being had therein to the accompanying drawing.

The construction and operation of my improved belt-shifter for cone pulleys are herein fully set forth, reference being had to the accompanying drawings which form a part hereof and in which,—

Figure 1 is a front elevation. Fig. 2 is a side elevation. Figs. 3, 4 and 5 are details.

The same reference characters indicate identical parts in all the views.

The object of my invention is to provide a belt shifter for cone pulleys, whereby the belt may be easily, quickly and simultaneously shifted upon both pulleys by the simple movement of a single lever, the device being so constructed that the belt cannot be shifted to the extent of more than one step of the cone-pulleys by a single movement of said lever, the operation being accomplished without particular care or pains on the part of the operator.

The construction of my improved belt-shifter is substantially as follows:

An arm 1,—which for practical reasons is preferably composed of two members *a* and *b*,—is mounted upon a carrying means consisting of the parallel rods or bars 2 and 3 which are located intermediate the cone pulleys 4 and 5. Rods 2 and 3 pass operably through a supporting means consisting of brackets 6 and 7, which may be attached to any suitable support. Said rods 2 and 3 are movable longitudinally in either direction, and, as both members of the arm 1 are rigidly attached thereto, they are caused to move in unison. The object of employing two rods, 2 and 3, is for the purpose of securing rigidity and stability, and for maintaining the proper alinement of the arm with the belt. It is obvious, however, that one rod or bar could be here employed without departing from the scope of my invention.

The respective extremities of arm 1 are positioned in close proximity to pulleys 4 and 5 respectively, and are provided with a belt-engaging means consisting of the stir-

55 rups 8 and 8' through which the belt passes as it approaches either of said pulleys; said stirrups being provided with stems 9 which pass through, and are movable longitudinally in, sockets 10 of arm 1. By this construction said stirrups 8 automatically adjust themselves to the position of the belt as it passes in either direction to the respective steps of said pulleys.

60 I have found it desirable to so construct the shifting means for arm 1, that its action will be limited to one step of the pulleys, or in other words, so that the belt will be shifted step by step upon the pulleys, and in order to accomplish this object I construct said shifting means substantially as follows: 65 Upon one of the carrying bars—preferably bar 3—I mount a sliding collar 12, which is provided with a tubular stub-shaft or extension 13, which passes through the lever 14. Within the stub shaft 13 is seated a latch or 70 bolt 15 which is engaged by an eccentric pin 16 upon the end of a revoluble shank 17 of the lever 14; shank 17 is provided with a suitable handle 18, and as said shank is turned a partial revolution, bolt 15 is moved 80 longitudinally to disengage the same from the notches 19 which are formed in the bar 3. Bolt 15 is preferably held in engagement with said notches by means of a spring 20. The distance between notches 19 corresponds 85 to the width of face of the steps of pulleys 4 and 5, and the swing of lever 14 is limited by means of an adjustable stop, which consists of a shoulder-bolt 21, which is attached at one end to sleeve 12, and passes loosely 90 through bracket 7, and is provided at the other end with nuts 23. When sleeve 12 is moved in one direction by means of the lever, the movement is limited by shoulder 22 coming in contact with bracket 7, and when 95 said sleeve is moved in the opposite direction, the movement is limited by the nuts 23 coming in contact with the bracket; said nuts providing a means for closely regulating or gaging the extent of movement of 100 said sleeve upon rod 3, so that the alinement of bolt 15 with notches 19 may be accurately secured at either limit of its movement, and the extent of travel of the carrying means and the thereto attached arms will also be 105 thus secured whereby the belt is shifted from step to step of the cone pulleys.

The operation of my improved belt shifter

is substantially as follows: It will be readily understood from the construction above set forth, that by turning handle 18 so that bolt 15 will be held from engagement with notches 19, the lever may be oscillated without moving the carrying means in either direction. Now, if it is desired to shift the belt toward the larger end of pulley 4, the handle will be turned to disengage the bolt and the lever will be moved in the direction indicated by arrow *d*—Fig. 1—; shoulder 22 will limit the movement of the lever in this direction, and by a slight turn of handle 18, bolt 15 will be caused to engage a notch 19. The lever is now moved in the direction indicated by arrow *c*, and,—by reason of the engagement aforesaid,—the carrying-means arm and belt engaging means are all caused to move, until said movement is limited by the nuts 23. This movement will shift the belt to a larger step of cone-pulley 4 and to a corresponding smaller step of cone-pulley 5; stirrup 8 will move outward or away from socket 10, thus automatically adjusting itself to the newly-assumed position of the belt, and stirrup 8' will move inward with the same automatic adjustment to the newly-assumed position of the belt upon said smaller step of its respective pulley. By repeating the above operation the belt may be carried another step in the same direction, and it will be readily understood that the belt may be shifted, by successive steps in the opposite direction, or to the other end of the respective pulleys.

By an inspection of Fig. 1 it will be noted that the stirrups 8 and 8' are each somewhat advanced toward the smaller end of its respective pulley, so that, as the belt is shifted in either direction, it is caused to pass onto the smaller cone of one pulley slightly in advance of its passage to the larger cone of the other pulley, which construction considerably facilitates the shifting of the belt and prevents undue stretching of the same.

What I claim is:—

1. In a belt shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same, with means for engaging said belt approximate to said pulleys, means for shifting said engaging means, and adjustable means for limiting the movement of said shifting means relative to the steps of said pulleys.

2. In a belt-shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same, with automatically-adjustable means for engaging said belt approximate to said pulleys, means for shifting said belt-engaging means, and adjustable means for limiting the movement of said shifting means relative to the steps of said pulleys.

3. In a belt-shifter for cone-pulleys, the combination of two cone pulleys and a trans-

mission belt for same, with automatically-adjustable means for engaging said belt approximate to said pulleys at the approach side thereof, means for shifting said belt-engaging means, and adjustable means for limiting the movement of said shifting means relative to the steps of said pulleys.

4. In a belt shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same, with an arm positioned between said pulleys, automatically adjustable means upon each end of said arm for engaging said belt, carrying means for said arm movable in axial alinement with said pulleys, and a lever detachably engaging said carrying means for the purpose of shifting same.

5. In a belt-shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same, with an arm positioned between said pulleys, automatically-adjustable means upon each end of said arm for engaging said belt approximate to said pulleys, carrying means for said arm movable in axial alinement with said pulleys, a lever detachably engaging said carrying means, there being evenly-spaced notches in said carrying means adapted to the engagement of said lever, for the purpose set forth.

6. In a belt-shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same, with an arm positioned between said pulleys, automatically-adjustable means upon each end of said arm for engaging said belt approximate to said pulleys at the approach side thereof, carrying means for said arm movable in axial alinement with said pulleys, a lever detachably engaging said carrying means, there being a plurality of notches in said carrying means adapted to the engagement of said lever, and adjustable means for regulating the movement of said lever.

7. In a belt-shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same with an arm positioned between said pulleys, automatically-adjustable means upon each end of said arm for engaging said belt approximate to said pulleys at the approach side thereof, means for maintaining substantially the parallel alinement of said arm with said belt, carrying means for said arm movable in axial alinement with said pulleys, a lever adapted to engage said carrying means at various points and to move the same, and adjustable means for regulating the movements of said lever, as and for the purpose set forth.

8. In a belt shifter for cone-pulleys, the combination of two cone-pulleys and a transmission belt for same, with an arm positioned intermediate said pulleys, automatically-adjustable means upon each end of said arm for engaging said belt approximate to said pulleys at the approach side thereof,

said engaging means being positioned so as to advance the belt in the direction of the smaller step as the belt is shifted, carrying means for said arm movable in axial alignment with said pulleys, a lever, detachably engaging said carrying means, there being a plurality of notches in said carrying means adapted for the engagement of said lever,

and adjustable means for regulating the movement of said lever.

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

FREDERICK F. CLARKE.

Witnesses:

RICHARD A. CLARKE,
CHAS. H. PERRINE.