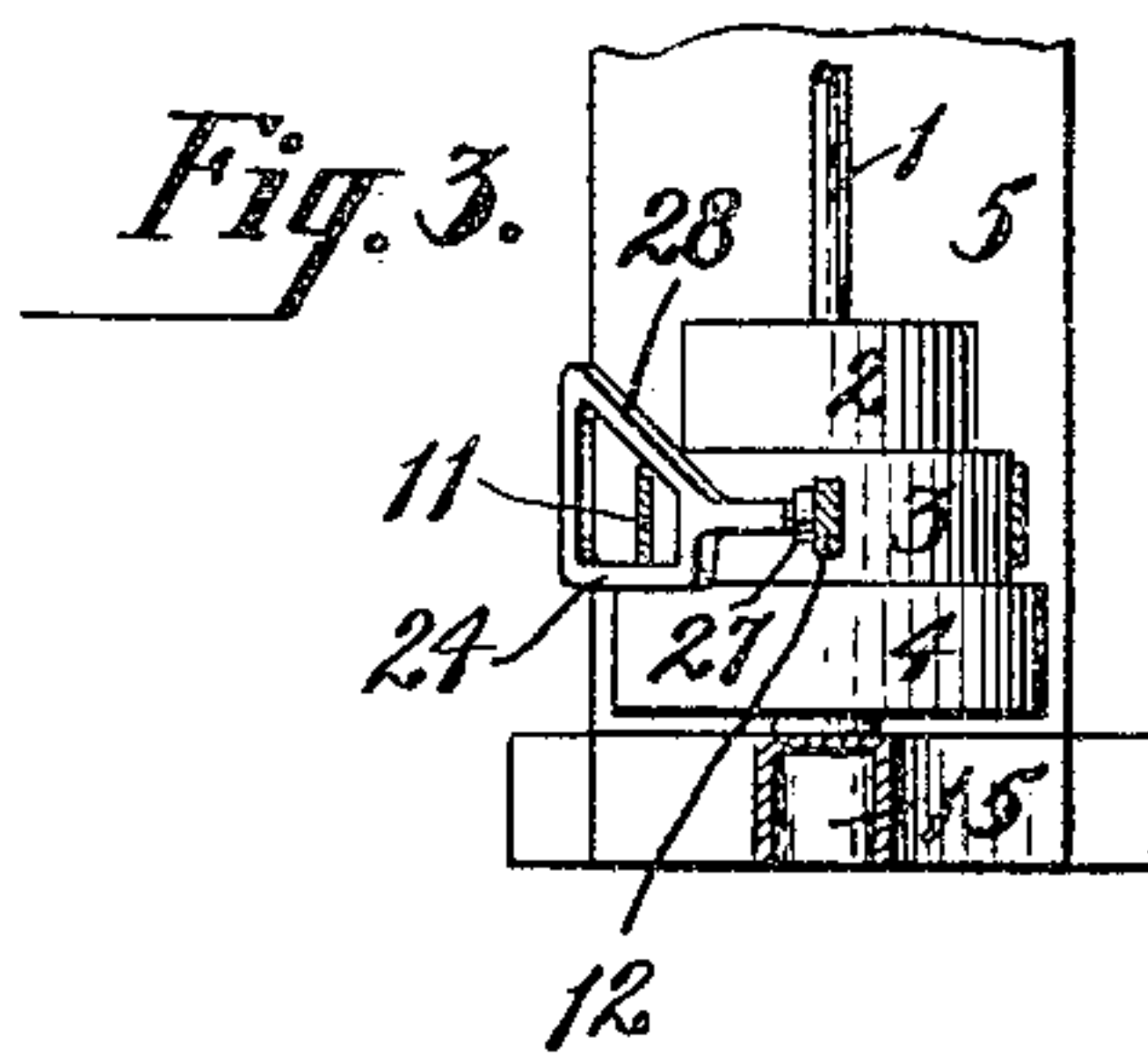
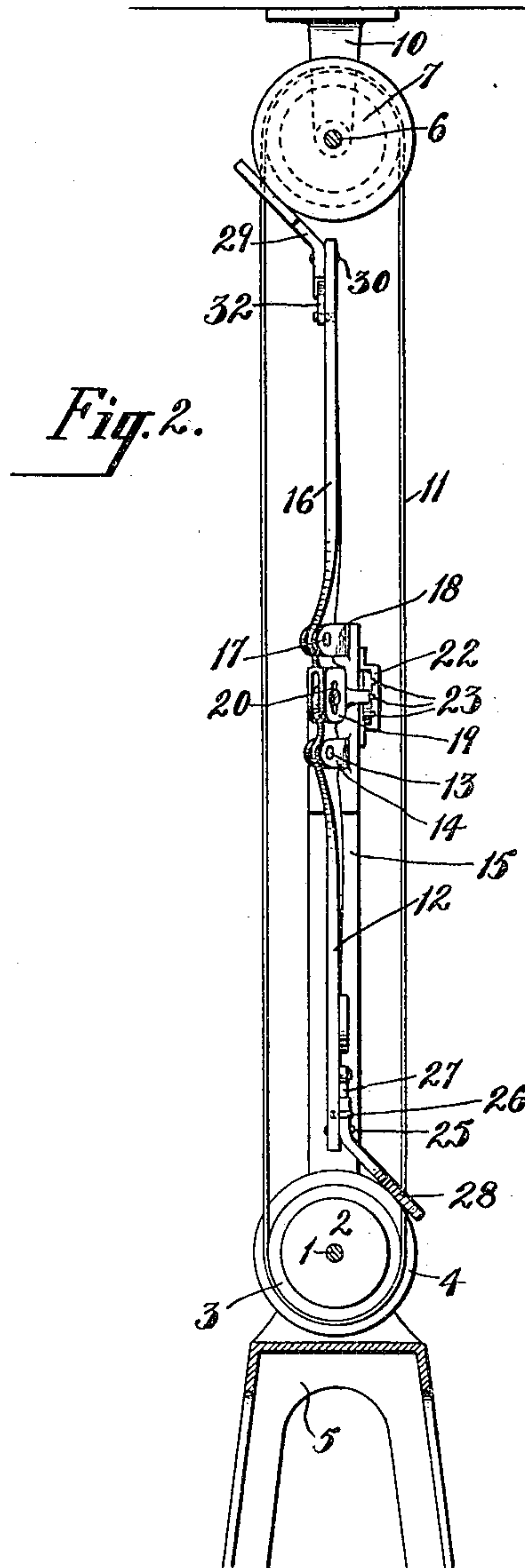
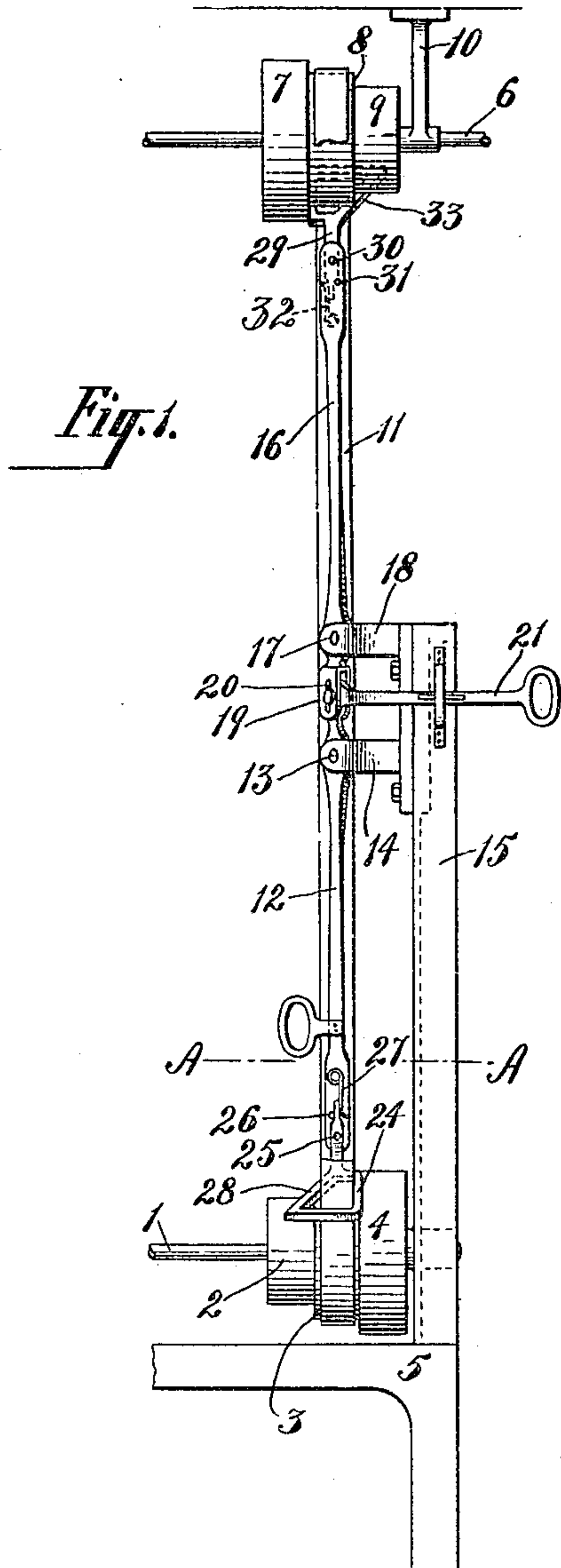


H. J. HOEGH.  
BELT SHIFTER.

APPLICATION FILED MAR. 18, 1904.

2 SHEETS—SHEET 1.



*Witnesses:*  
J. G. Hachenberg.  
Henry Thine.

*Inventor:*  
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No. 808,088.

PATENTED DEC. 26, 1905.

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2 SHEETS—SHEET 2.

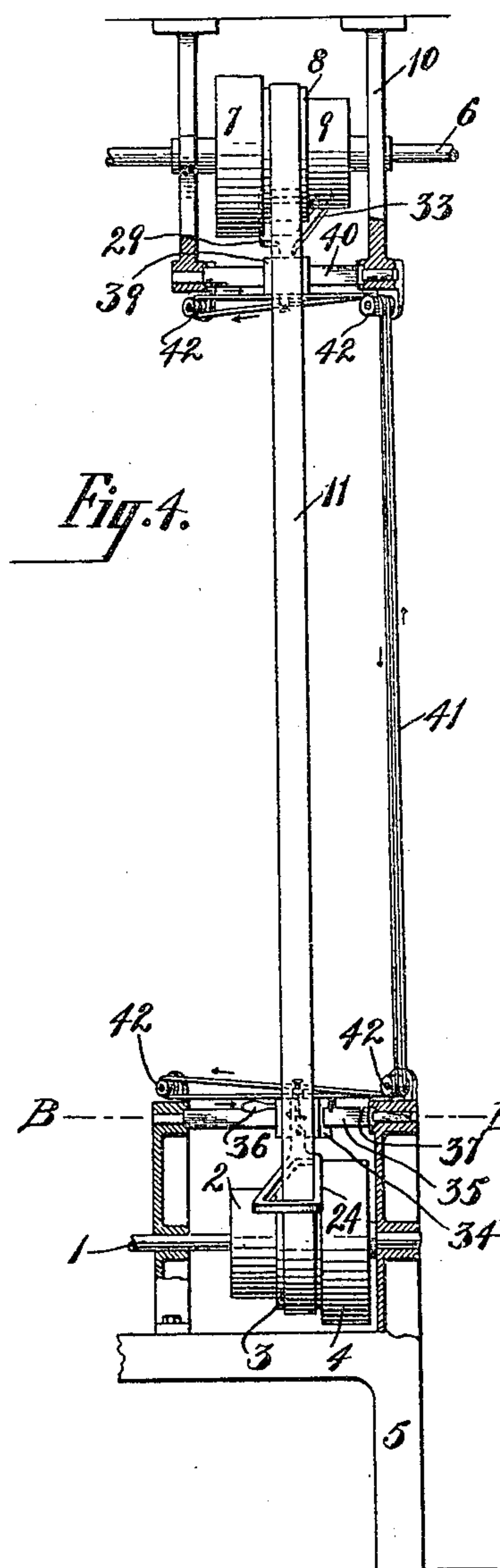


Fig. 4.

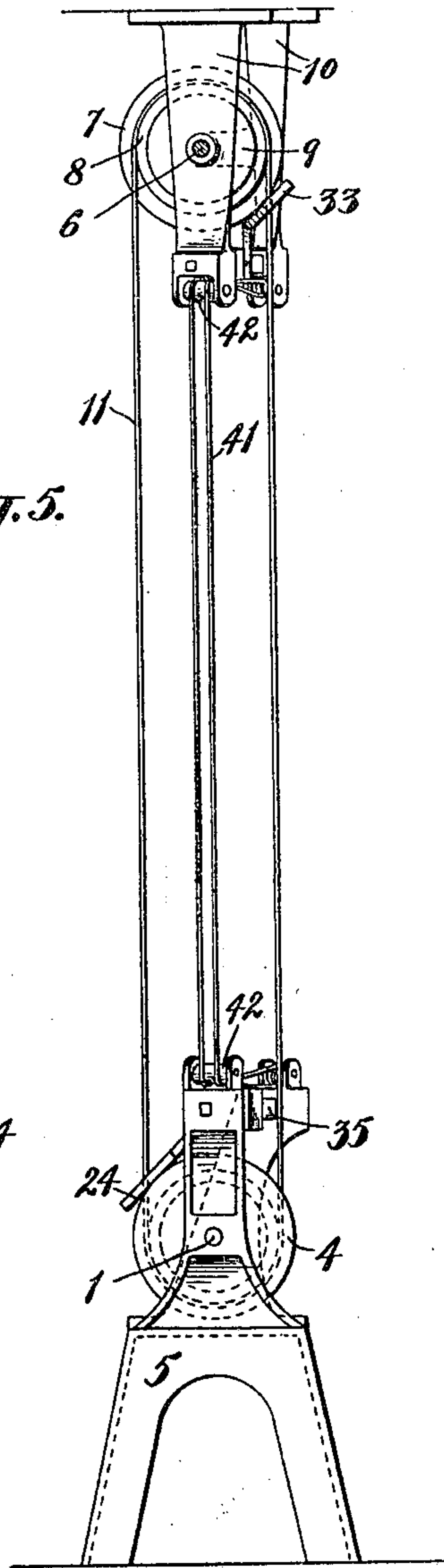


Fig. 5.

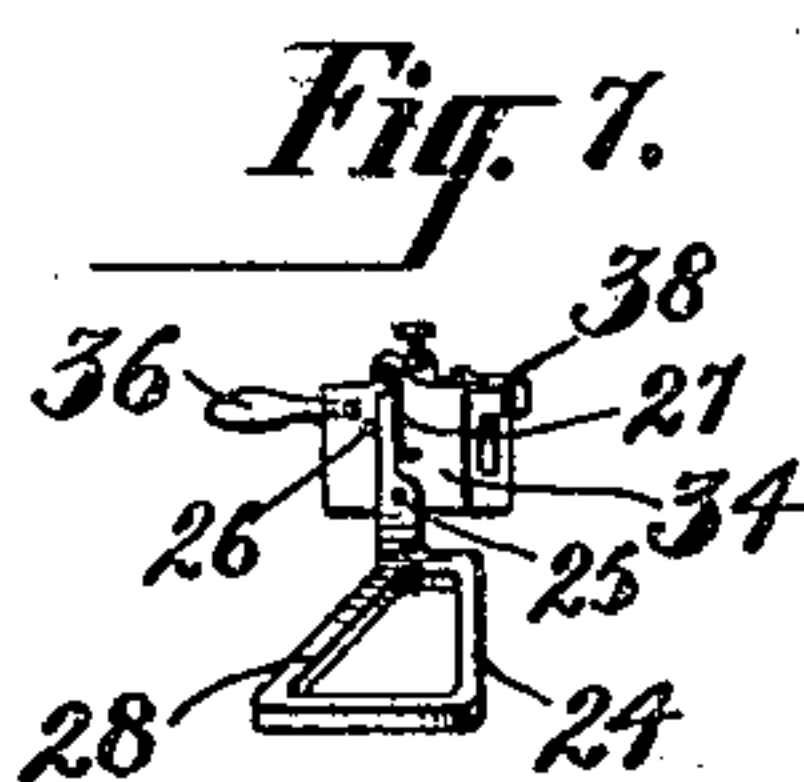


Fig. 7.

Witnesses:

J. S. Hachenburg.

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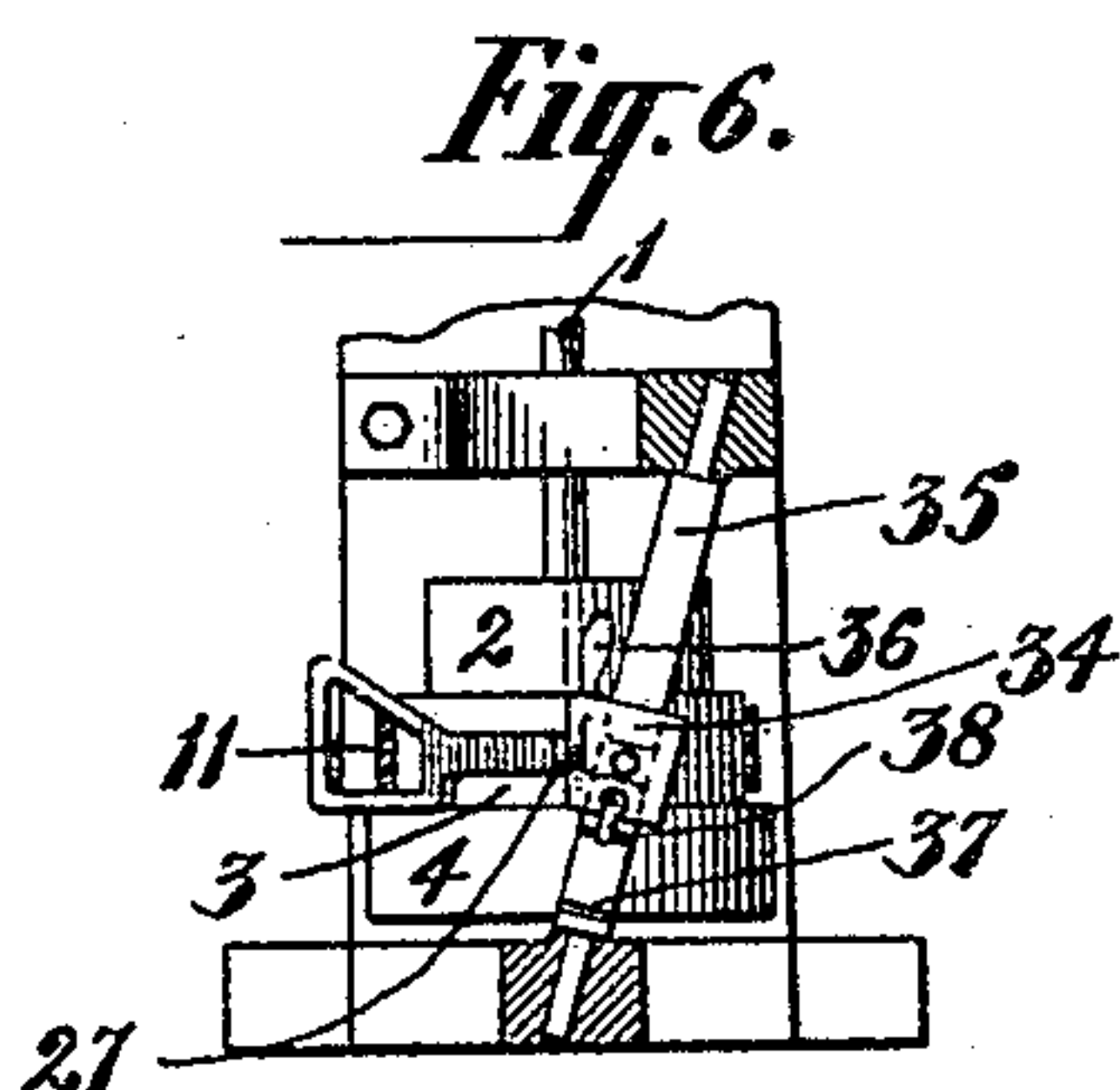


Fig. 6.

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# UNITED STATES PATENT OFFICE.

HANS J. HOEGH, OF NEW YORK, N. Y.

## BELT-SHIFTER.

No. 808,088.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed March 18, 1904. Serial No. 198,757.

*To all whom it may concern:*

Be it known that I, HANS J. HOEGH, a citizen of the United States, and a resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Belt-Shifters, of which the following is a specification.

My invention relates to an improvement in belt-shifters, and has more particularly for its object to provide improved means for shifting the belt downward on one pulley and upward on the other pulley.

Practical embodiments of my invention are represented in the accompanying drawings, in which—

Figure 1 represents one embodiment of my invention in front elevation, a portion of the driving-belt being broken away to more clearly show the parts behind the same. Fig. 2 is a side view of the form shown in Fig. 1. Fig. 3 is a transverse section taken in the plane of the line A A of Fig. 1. Fig. 4 is a front view of another embodiment of my invention, parts of the same being shown in section to more clearly illustrate the operation of the device. Fig. 5 is a side view of the same. Fig. 6 is a horizontal section taken in the plane of the line B B of Fig. 4, and Fig. 7 is a detail view in perspective of one of the loop-carrying slides.

The shaft of the lower cone-pulley is denoted by 1, and the several steps of the pulley from the smallest to the largest are denoted by 2, 3, and 4, respectively. A suitable base 5 is provided for the shaft 1. The shaft of the upper cone-pulley is denoted by 6, and the steps of the cone from the largest to the smallest are denoted by 7, 8, and 9, respectively. A hanger 10 is shown for supporting the shaft 6. The driving-belt is denoted by 11 and is shown herein as running on the intermediate steps 3 and 8 of the lower and upper cone-pulleys.

The form of belt-shifter shown in Figs. 1, 2, and 3 is constructed, arranged, and operated as follows: A rock-lever 12 is pivoted at 13 to a bracket 14, projecting from an upward extension 15 of the base 5. The lower or long arm of this lever 12 extends to a point in proximity to the top of the lower cone-pulley. An upper rock-lever 16 is pivoted at 17 to a bracket 18, carried by the upward extension 15 of the base 5, a short distance above the bracket 14. The short arms of these two levers 12 and 16 have a pin-and-slot connection 19 20, so that the long arms of the levers

are rocked in the same direction. The long arm of the lever 16 extends to a point in proximity to the upper cone-pulley. A handle 21 projects laterally from the short arm of the lower lever 12, which handle is used for swinging the two levers. A notched rack 22 is provided, the notches 23 of which are fitted to removably hold the handle 21 in three different positions, as will hereinafter more fully appear. A belt-embracing loop 24 is hinged at 25 to the long arm of the lever 12. A stop 26 provides the movement of the loop in one direction. A spring 27 permits the loop to swing in the other direction against the tension of said spring. This loop 24 is arranged at an angle to the belt 11, in the present instance at an angle of forty-five degrees with respect thereto. The side 28 of the loop, which is fitted to yieldingly engage the edge of the belt, is arranged at an angle with respect thereto tending to force the belt outwardly when the belt is being shifted from a smaller to a larger step on the lower pulley. A similar belt-shifting loop 29 is hinged at 30 to the upper end of the long arm of the rock-lever 16. A stop 31 serves to prevent the swinging movement of the loop in one direction, while a spring 32 permits the loop to have a yielding movement in the opposite direction. This loop 29 is provided with an inclined side 33, which tends to force the belt outwardly when it is being shifted from a smaller to a larger step on the upper pulley. The pivotal connections 17 and 13 of the levers 16 and 12 are at an angle with respect to the shafts of the upper and lower pulleys, so that the loops 29 and 24 are swung in planes parallel to the tapers of the cones. The loop 29 engages the belt where it rides onto the upper pulley, and the loop 24 engages the belt where it rides onto the lower pulley.

In the embodiment of my invention represented in Figs. 4 to 7, inclusive, the lower loop 24 is hinged on a guide or block 34, fitted to slide on a bar 35. This guide 34 is provided with an operating-handle 36. The bar 35 is provided with notches 37, fitted to be engaged by a dog 38, carried by the guide 34, for locking the loop 24 in its three different positions opposite the three steps of the lower pulley. The upper loop 29 is similarly hinged to a guide or block 39, fitted to slide on a bar 40. These guides or blocks 34 39 are connected to move together in the same direction along their bars by an endless flexible connection, such, for instance, as a cord 41,



one part of the cord being secured to the guide 34 and another part of the cord being secured to the guide 39. Pulleys 42 are arranged at the desired points for leading the cord 41 in the proper direction. These bars 35 and 40 are arranged parallel to the taper of their pulleys for the purpose of keeping their respective loops in close proximity to the said pulleys whether the belt be on the large or small step of each pulley.

In both of the embodiments shown and described herein the loops are arranged to positively shift the belt downwardly on one pulley and yieldingly shift the belt upwardly on the other pulley a corresponding distance. In both of the forms shown after the belt has been shifted to its required position on the two pulleys the supports for the loops are temporarily locked in position, thus preventing the loops from continually dragging on the belt after the belt has been shifted and also preventing the shifting of the belt to another position on the pulleys.

What I claim as my invention is—

1. Two stepped cone-pulleys and their belt, means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley, and means for holding the belt-shifting means in its different adjustments.

2. Two stepped cone-pulleys and their belt and means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley comprising two rock-levers connected to swing simultaneously in the same direction and belt-shifting loops hinged to said levers.

3. Two stepped cone-pulleys and their belt and means for shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley comprising two rock-levers, belt-shifting loops hinged thereto being held against movement in one direction and arranged to yield against spring tension in the other direction.

4. Two stepped cone-pulleys and their belt and means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley comprising two rock-levers connected to swing simultaneously in the same direc-

tion, a handle for swinging the levers and belt-engaging loops hinged to the levers.

5. Two stepped cone-pulleys and their belt and means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley, comprising two rock-levers connected to swing simultaneously in the same direction, belt-engaging loops hinged to said levers, a handle for operating the levers and means engaging the handle for holding the device in its different positions.

6. Two stepped pulleys and their belt and means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley, comprising a belt-shifting loop adjacent to each pulley and means for moving the loop in a plane parallel with the taper of the pulley.

7. Two stepped cone-pulleys and their belt and means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley, comprising a belt-shifting loop adjacent to each pulley arranged at an angle thereto and having one of its sides arranged at an angle to the belt.

8. In a belt-shifter, a loop embracing the belt having one side arranged at right angles to the belt for positively shifting the belt downwardly on its pulley and another side at an angle to the belt tending to force the belt outwardly as it is being shifted upwardly on the pulley.

9. Two stepped cone-pulleys and their belt and means for positively shifting the belt downwardly on one pulley and yieldingly shifting the belt upwardly on the other pulley, comprising a block adjacent to each pulley fitted to slide in a plane parallel with the taper of its pulley, belt-shifting loops carried by the blocks and a flexible connection between the blocks for moving them simultaneously in the same direction.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 14th day of March, 1904.

HANS J. HOEGH.

Witnesses:

FREDK. HAYNES,  
HENRY THIEME.