(No Model.)

F. LOMBARD.

BELT SHIFTER.

No. 587,041. Patented July 27, 1897.

Fig. 1.

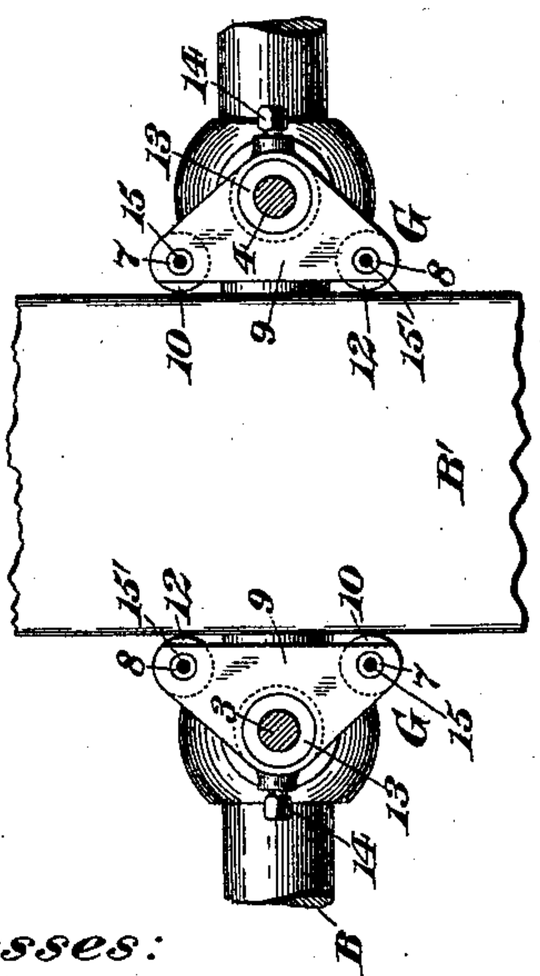
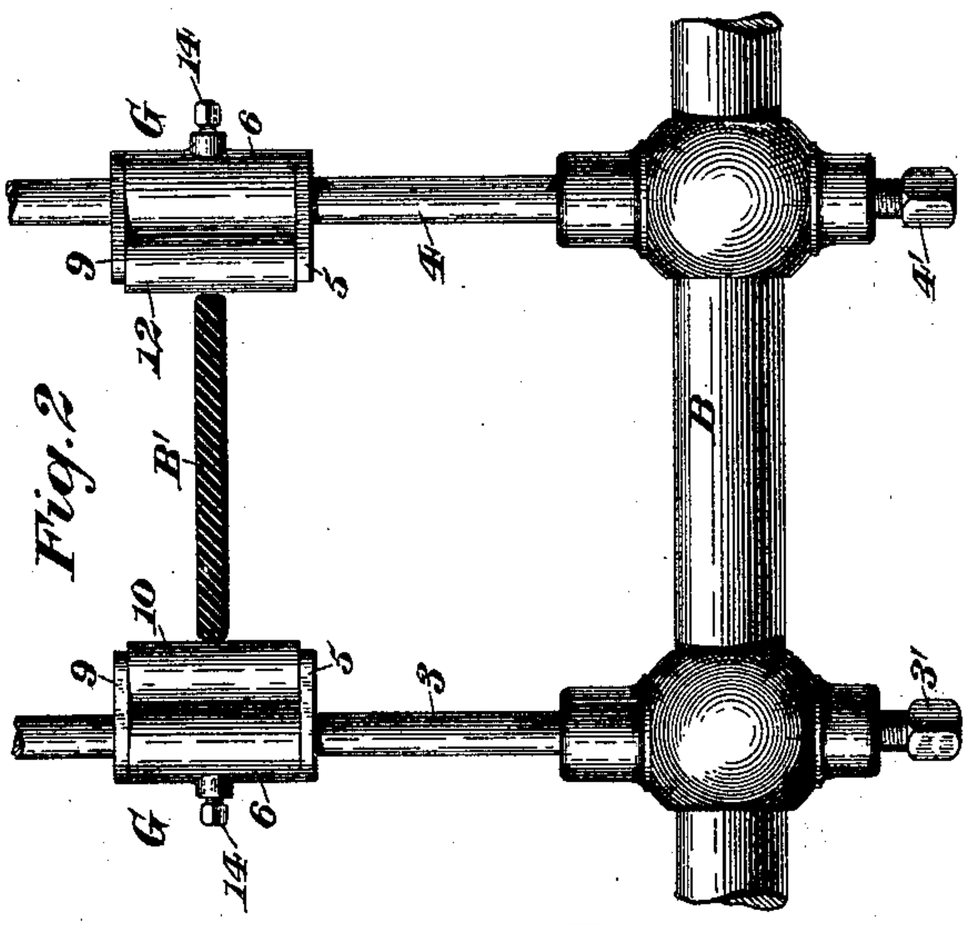


Fig. 2.



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By his Attorney,
F. A. Richards.

Fig. 3.

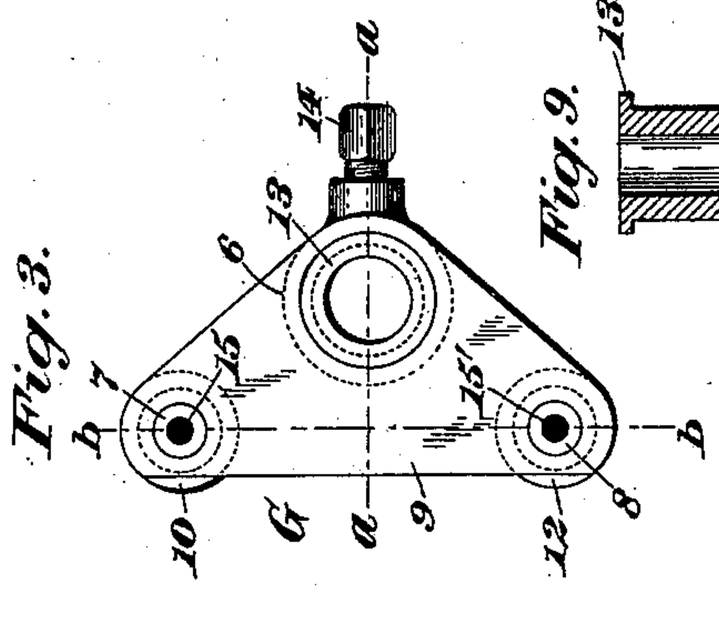


Fig. 4.

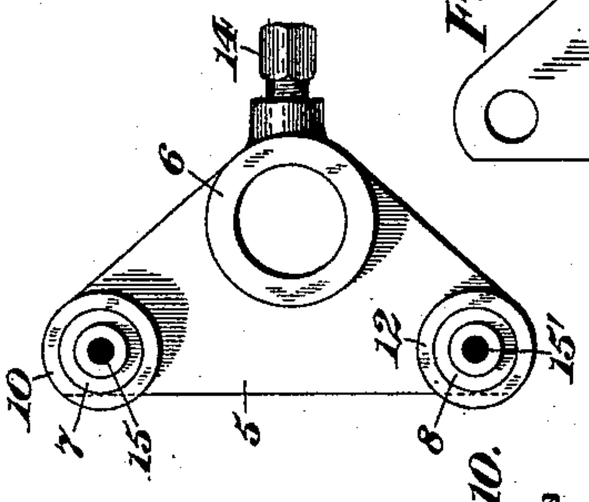


Fig. 5.

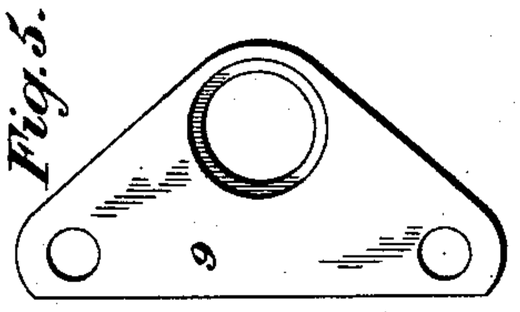


Fig. 6.

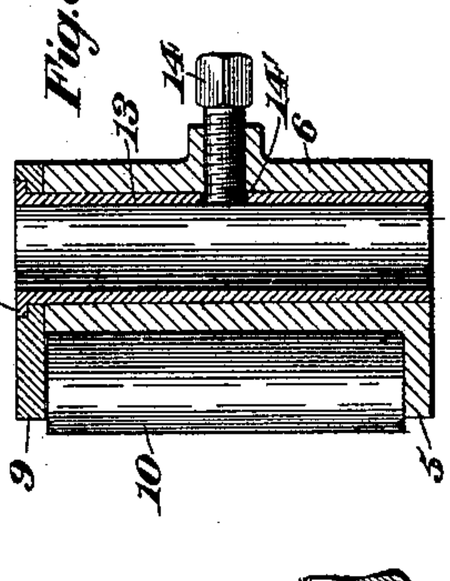


Fig. 7.

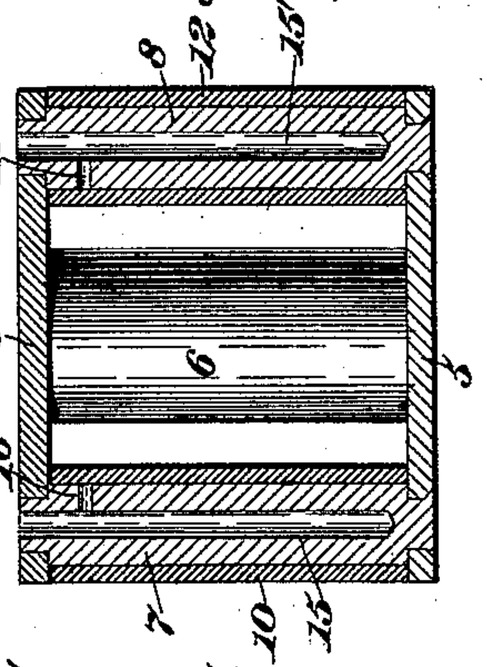


Fig. 8.

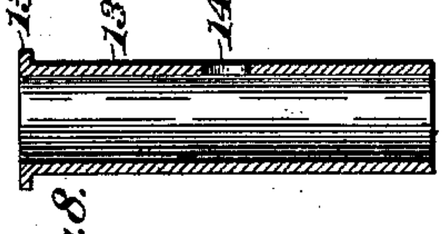


Fig. 9.

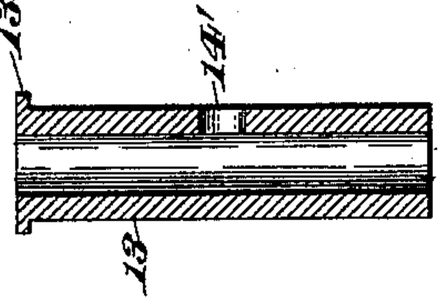
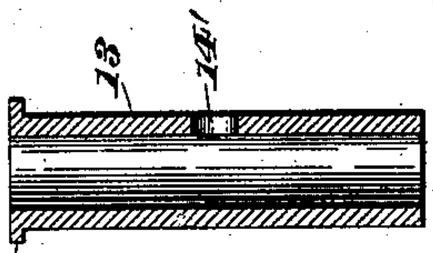


Fig. 10.



UNITED STATES PATENT OFFICE.

FRANK LOMBARD, OF HARTFORD, CONNECTICUT.

BELT-SHIFTER.

SPECIFICATION forming part of Letters Patent No. 587,041, dated July 27, 1897.

Application filed May 13, 1897. Serial No. 636,291. (No model.)

To all whom it may concern:

Be it known that I, FRANK LOMBARD, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Belt-Shifters, of which the following is a specification.

This invention relates to belt-shifters.

To users of the ordinary belt-shifter having rigid guide-fingers the injurious wear due to excessive and constant friction between the belt and guide-fingers has been a source of considerable annoyance and expense, especially if the shifter has been used in connection with very heavy belts, as such friction not only wears away the fingers of the shifter to such an extent as to impair their stability and necessitate the substitution of new fingers, but also skives the edges of the belt in such manner as to greatly reduce its strength and efficiency, and for this reason it has been impracticable to use a woven belt in connection with the ordinary belt-shifter, as the friction soon severs the weft-threads at the edges of the belt, causing the same to fray and ravel.

The object of this invention is to furnish a simple and effective belt-shifter embodying means whereby the injurious wear between the belt and the guide-fingers of the belt-shifter will be practically obviated.

A further object of the invention is to provide, in connection with the two fingers of a belt-shifter, two oppositely-disposed antifriction belt-guides, secured one to each finger and adjustable longitudinally thereon, and each guide embodying a carrier or frame, means for clamping said carrier in an adjusted position on the belt-shifter finger, and one or more bearing-rolls mounted on said carrier or frame in position to engage the edge of a belt.

In the drawings accompanying and forming part of this specification, Figure 1 is a sectional plan of a belt-shifter embodying my invention, a portion of the shifter-bar or guide-finger-carrying rod being broken away and a portion of a belt being shown in position between the rolls of the two guiding devices. Fig. 2 is a side elevation of the parts shown in Fig. 1. Fig. 3 is a plan view, on an enlarged scale, of one of the antifriction belt-guides. Fig. 4 is a plan view of the belt-guide shown in Fig. 3 with the top plate thereof removed. Fig. 5 is a plan view of the top plate of the belt-guide detached. Fig. 6 is a section of the antifriction belt-guide, taken in dotted line *a a*, Fig. 3. Fig. 7 is a section of the antifriction belt-guide, taken in line *b b*, Fig. 3, as seen from the left in said figure. Figs. 8, 9, and 10 are longitudinal sections of three interchangeable tubular bushings for the carrier or frame of the antifriction belt-guide, the three bushings having relatively different internal diameters to enable them to fit guide-fingers of different diameters.

Similar characters designate like parts in all the figures of the drawings.

The belt-shifter in the preferred form thereof (shown most clearly in Figs. 1 and 2 of the drawings) comprises a shifter bar or rod B, which may be of any suitable general construction, two laterally-projecting fingers 3 and 4, adjustably secured to the shifter-bar, preferably by set-screws 3′ and 4′, two oppositely-disposed antifriction belt-guides, each of which is designated in a general way by G and each of which is supported on a finger for concentric and longitudinal adjustment relatively thereto, and means for securing the guides in their adjusted positions on their respective carrying-fingers.

The antifriction belt-guides, in which the essence of this invention resides, comprises, in the preferred form thereof, (shown most clearly in Figs. 1 to 7, inclusive, of the drawings,) a frame or carrier, means for securing the carrier to the finger of the belt-shifter, and one or more rolls mounted on the frame in position to engage a belt.

The frame of the belt-guide in the form shown in the accompanying drawings consists, preferably, of a triangular base-plate 5, having preferably formed integral therewith a rectangularly-disposed sleeve or axially-recessed post 6, two roller-supporting pintles or bearings (designated by 7 and 8, respectively) extending outward at right angles from opposite corners of the base-plate 5, at opposite sides, respectively, of the sleeve or post 6 and preferably at equal distances from the center of said sleeve, and a cap 9, which cap is preferably of the same general construction as the base-plate 5 and has a recess

near one angle thereof to correspond to and register with the axial recess of the sleeve or post 6.

The upper ends of the pintles are shown (see Figs. 4 and 7) diametrically reduced to form shoulders for supporting the cap 9, the diametrically-reduced portions of the pintles extending through openings in said cap. The opposite end of each pintle is also shown diametrically reduced and extended through a countersunk opening in the base-plate 5, where it is secured to the base 5 by a flange formed by upsetting this end of the pintle. It will be obvious that the pintles might, however, be formed in one piece with the base-plate.

Mounted upon the two pintles 7 and 8 for rotative movement between the base-plate 5 and cap 9 are two tubular rolls 10 and 12, respectively, whose peripheries preferably extend at one side beyond the peripheral line of the frame.

For convenience I have provided, in connection with the belt-guide frame, a tubular bushing 13, which is shown removably seated in the axial recess of the sleeve or post 6 of the belt-guide frame, and which bushing has an internal diameter substantially corresponding to the diameter of the finger to which the belt-guide is applied. This tubular bushing has, for convenience in holding the cap 9 of the belt-guide frame in place, an annular flange 13′ at the upper end thereof, which is seated in an annular recess in the face of the cap 9, as shown most clearly in Figs. 3 and 6 of the drawings, the end face of the flange lying flush with the outer face of the cap 9.

As a simple and convenient means for adjustably attaching the antifriction belt-guide to a finger of the belt-shifter the sleeve or post 6 is transversely bored and tapped to receive a clamp-screw 14, the shank of which has a screw-threaded bearing in said sleeve and extends through an opening 14′ in the tubular bushing 13 in said sleeve, as shown most clearly in Fig. 6 of the drawings, the inner end of the screw 14 bearing, when the parts of the belt-shifter are assembled, against the periphery of the finger of said belt-shifter.

By providing a series of interchangeable bushings adapted to fit the bore of the sleeve 6 and having said bushings of relatively different internal diameters the belt-guide may be readily applied to belt-shifter fingers of different diameters by simply removing one bushing and inserting another bushing having the requisite internal diameter to fit the finger.

As a convenient means for automatically feeding oil in proper quantities to the interior or bearing face of each tubular roll as required the two roll-supporting pintles 7 and 8 are longitudinally recessed for the major portion of their lengths to form oil-reservoirs 15 and 15′, preferably open at their upper ends, and said pintles are transversely bored near their upper ends to form oil-conduits 16 and 16′, which communicate at their outer ends with the oil-reservoirs 15 and 15′, respectively.

It will be understood that when the rolls are in contact with a moving belt the heat due to friction will cause the oil contained in the reservoirs 15 and 15′ to rise and pass through the conduits 16 and 16′ to the inner faces of the rolls.

In practice two antifriction belt-guides will be employed, one in connection with each finger 3 and 4, and located at opposite edges, respectively, of the belt B′, with the rolls 10 and 12 in contact with the edges of said belt; and by the construction and organization of belt-guides hereinbefore described, and illustrated in the drawings, the belt-guide may be adjusted in the arc of a circle on the belt-shifter finger to change the angle of the bearing as required, and, furthermore, the belt-guides may be shifted longitudinally of their respective fingers and quickly secured in any desired position.

By providing two rolls on each belt-guide I secure a longer bearing than is possible with the ordinary belt-shifter, which is obviously advantageous.

Having described my invention, I claim—

1. In an antifriction belt-guide, a frame comprising a base-plate having a sleeve; a hollow roller-supporting pintle fixed to said base-plate with its axis in parallelism with the axis of the sleeve and having an oil-conduit communicating with the interior and exterior thereof; in combination with a roller supported on said pintle, and means for adjustably securing the frame to the finger of a belt-shifter.

2. An antifriction belt-guide comprising a frame with a base-plate having a sleeve opening through said base-plate; two tubular roller-supporting pintles fixed to said base-plate with their axes in parallelism with, and substantially equidistant from, the axis of the sleeve, and each pintle having a transverse oil-conduit communicating with the interior and exterior thereof; two rollers supported one on each pintle; means for holding the rollers against longitudinal displacement; and means for adjustably securing the frame to the finger of a belt-shifter.

3. A belt-shipper comprising a shifter-bar; two fingers secured to said bar; and two oppositely-disposed belt-guides attached to the fingers, respectively, for longitudinal and circumferential adjustment, and each guide having two parallel rolls adapted for engaging the side edge of the belt at different points, respectively, in the length thereof.

4. The combination, with a belt-shifter finger, of a frame secured to the belt-shifter finger and provided with a roll-supporting pintle having a longitudinally-disposed oil-reservoir open to the end of the pintle and a transversely-disposed conduit communicating with the oil-reservoir and open to the periphery of

said pintle; a tubular roll mounted on said pintle; and a cap for holding the roll against longitudinal displacement.

5. The herein-described belt-guide, it consisting of a triangular base-plate having a rectangularly-disposed sleeve or recessed post; two axially-recessed pintles secured to the base-plate at opposite sides of, and at substantially equal distances from, the axis of the sleeve, and each having a transverse conduit communicating at opposite ends with the interior and exterior, respectively, of said pintle, and said pintles also having their outer ends diametrically reduced to form cap-supporting shoulders; two tubular rolls mounted on the two pintles; a cap supported on the shoulders at the outer ends of the pintles; an interchangeable tubular bushing seated in the sleeve and having a flange at the upper end thereof adapted to enter a recess in the cap and hold the cap in place; and a set-screw extending through the sleeve and bushing and constituting a clamping device for securing the belt-guide to a belt-shifter finger.

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